Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

2SD11
.R23
C7

United States
Department of
Agriculture

Forest Service

Tongass National Forest

R10-MB-437

September 2001

North Prince of Wales / El Capitan Road Improvements Project

Environmental Assessment

USDA
NATL AGRIC LIBRARY
2001 OCT -2 P 1:49
CURRENT SERIAL RECORDS
SERIALS BRANCH

List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADT	average daily traffic
ADOT&PF	Alaska Department of Transportation and Public Facilities
ANILCA	Alaska National Interest Lands Conservation Act
BMP	best management practice
BP	before present
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	environmental assessment
EFH	Essential Fish Habitat
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
ID	interdisciplinary
IFA	Inter-Island Ferry Authority
LUD	land use designation
NEPA	National Environmental Policy Act
NFSR	National Forest system road
NMFS	National Marine Fisheries Service
NPDES	National Pollutant and Discharge Elimination System
NPOW	North Prince of Wales Island
NWI	National Wetlands Inventory
POWCAC	Prince of Wales Community Advisory Council
RV	recreational vehicle
USEPA	U.S. Environmental Protection Agency
USFS	USDA Forest Service
USFWS	U.S. Fish and Wildlife Service
VPR	visual priority route
VQO	visual quality objectives
WFLHD	Western Federal Lands Highway Division

Printed on Recycled Paper

United States Department of Agriculture
Forest Service
Alaska Region
Tongass National Forest
Thorne Bay Ranger District
P.O. Box 19001
Thorne Bay, Alaska 99919
(907) 828-3304
FAX: (907) 828-3309

File Code: 1950

Date: September 10, 2001

Dear Reader:

Enclosed is a copy of the North Prince of Wales/El Capitan Road Improvements Environmental Assessment (EA) for your review and comment. This document analyzes one no-action and three action alternatives. The action alternatives are summarized below.

Alternative 2 (Preferred Alternative): This proposal would upgrade two areas to paved, two-lane roads:

- FDR 20 from its intersection with FDR 23 to its intersection with FDR 15
- FDR 15 from its intersection with FDR 20 to the El Capitan Cave

Alternative 3: This proposal would upgrade three areas to paved, two-lane roads:

- FDR 20 from its intersection with FDR 23 to its intersection with FDR 25
- FDR 25 from its intersection with FDR 20 to its intersection with FDR 30
- FDR 30 from its intersection with FDR 25 to its intersection with FDR 27

Alternative 4: This proposal would upgrade two areas to either paved or gravel, two-lane roads:

- FDR 20 from its intersection with FDR 23 to its intersection with FDR 27 (paved)
- FDR 27 from its intersection with FDR 20 to its intersection with FDR 30 (gravel)

No new road segments would be constructed for any of the action alternatives. The design speed limit for all improved roads would be 35 mph. All action alternatives include recreation features to improve visitor enjoyment of the area, which may include scenery enhancements, picnic areas, restrooms, trail access, parking, pull-out areas, and interpretive signs.

The comment period for the EA will close 30 days after the date the public notice is published in the *Ketchikan Daily News*, the newspaper of record. The publication date is anticipated to be September 14. Please include the following information with your comments:

1. Name, address, and (if possible) telephone number;
2. Title of the document(s) on which comment is being submitted;
3. Specific facts or comments along with supporting reasons that you believe the Responsible Official should consider in reaching a decision.

Dave Schmid, Thorne Bay District Ranger, is the official responsible for the decision.

Please send written comments to: Robert Wetherell, Thorne Bay Ranger District, P.O. Box 19001, Thorne Bay, AK 99919. You may call (907) 828-3304 for additional information or if you would like additional copies of this EA.

Sincerely,

DAVID E. SCHMID
District Ranger

Table of Contents

LIST OF FIGURES

LIST OF TABLES

Chapter 1
Purpose and Need for Action

INTRODUCTION

The USDA Forest Service (USFS) has prepared this Environmental Assessment (EA) to evaluate the potential effects of road improvements to the North Prince of Wales (NPOW)/El Capitan Road System (National Forest System Roads [NFSR] 20 and 15). These roads are located on Prince of Wales Island and are within the Thorne Bay Ranger District, Tongass National Forest, Alaska. This EA discloses the direct, indirect, and cumulative environmental impacts and any irretrievable commitment of resources that would result from the proposed action and alternatives. In this document, the 1997 Tongass Land and Resource Management Plan, as amended (with accompanying standards and guidelines), is referred to as the Forest Plan.

This EA has been prepared pursuant to the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations, according to the format established by the Council on Environmental Quality (CEQ) regulations implementing NEPA. The EA is organized into five chapters.

Chapter 1 explains the purpose and need for the proposed action and its relation to the Forest Plan and certain federal and state policies and regulations. Chapter 1 also describes the NEPA scoping process and identifies the key issues driving the EA analysis.

Chapter 2 describes and compares the proposed action, alternatives to the proposed action, and a no-action alternative; and summarizes the significant environmental consequences by issue.

Chapter 3 describes the physical, biological, and human environments potentially affected by the proposed action and alternatives, and discloses what potential effects are anticipated.

Chapter 4 contains references.

Chapter 5 contains the distribution list.

OVERVIEW

The primary purpose of this chapter is to introduce the NPOW/El Capitan Road Improvements project, explaining what the Forest Service is proposing to do, why the project is needed, and how the project will fit into the Forest Plan. This chapter also introduces the five resource issues or concerns that will be evaluated in the EA.

This EA was developed in cooperation with Alaska Department of Transportation and Public Facilities (ADOT&PF) and the Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration with the Forest Service serving as the lead agency responsible for the NEPA assessment, project design and construction, and long-term road maintenance.

PROJECT AREA DESCRIPTION

The project area considered in this EA includes a portion of NFSR 20 (between NFSR 20's intersection with NFSR 23 north to its intersection with NFSR 15), NFSR 15, NFSR 25, NFSR 27, and a portion of NFSR 30 (along Whale Passage) (Figure 1-1). Project distances and locations for each of the roads are:

NFSR 20

This roadway is the primary north/south transportation corridor in the Thorne Bay Ranger District. Total road length is 82.1 miles, of which 24.5 miles are considered for transportation improvements in this EA.

NFSR 15

This road is an east/west road that provides the transportation link between NFSR 20 and El Capitan Cave. On Prince of Wales Island, NFSR 15 is 0.9 mile long on National Forest property, and then continues through non-federal land.

NFSR 25

This east/west road alignment traverses the southern periphery of Neck Lake and links up with NFSR 30 to provide the southern approach to Whale Pass from NFSR 20. NFSR 25 is 3.7 miles long, and its total length is being considered for transportation improvements in this EA.

NFSR 30

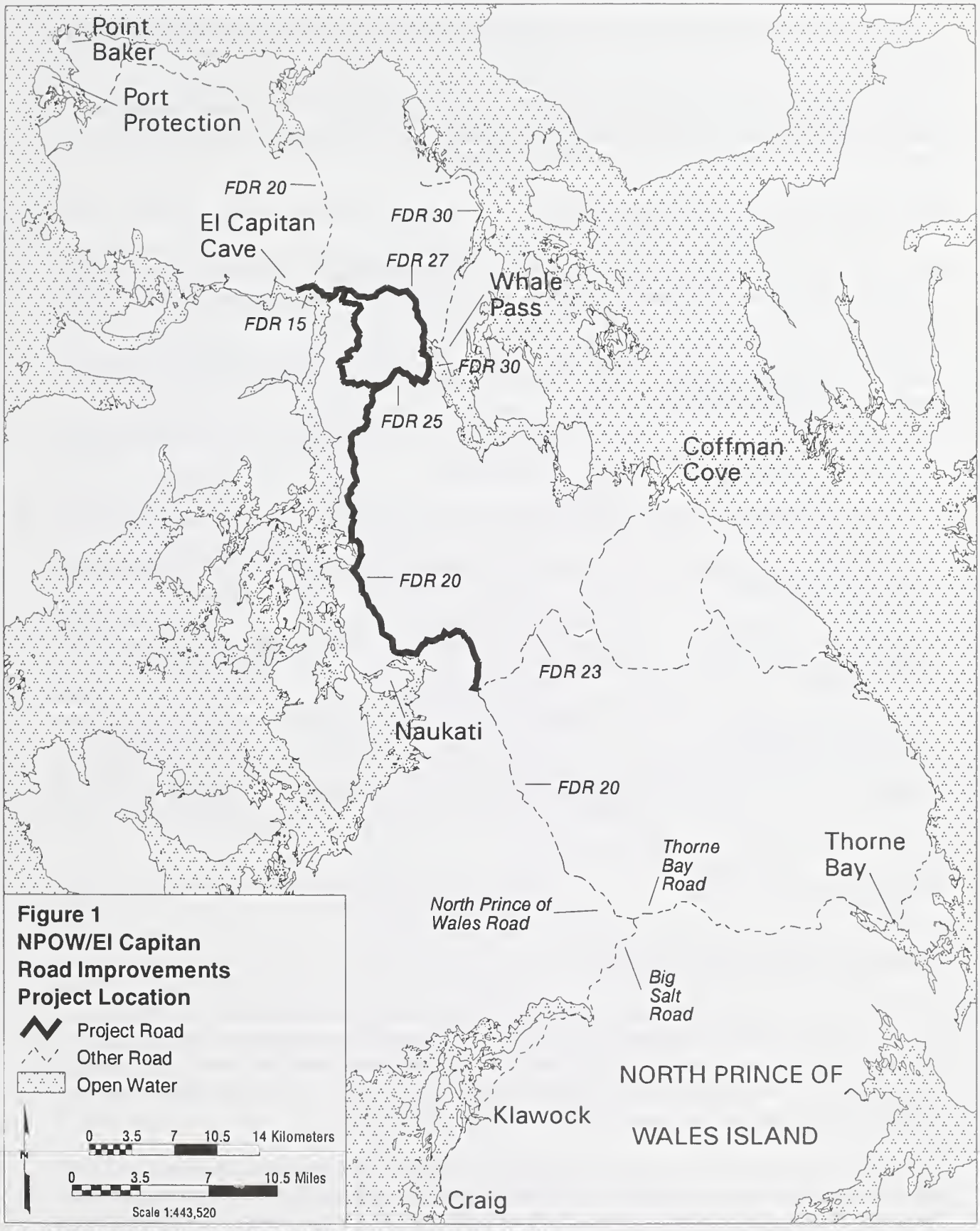
This roadway is a north/south road alignment adjacent to Whale Passage. Along with NFSR 25, NFSR 30 provides the southern approach to Whale Pass from NFSR 20. The total road length for the north section of NFSR 30 is 16.3 miles, of which 2.8 miles are considered for transportation improvements in this EA.

NFSR 27

This east/west road provides a northern approach to Whale Pass from NFSR 20. NFSR 27 is 6.1 miles long, and the entire road is considered for transportation improvements in this EA.

Project analysis encompasses approximately 150 ft on either side of these roads. The NFSR 20 and 15 road system is used for traveling to El Capitan Cave from communities south of the cave, including Whale Pass, Naukati, Coffman Cove, Thorne Bay, Klawock, and Craig. NFSR 25 and 30 are used to travel to Whale Pass from NFSR 20 using a southern approach, whereas NFSR 27 also provides transport between Whale Pass and NFSR 20 using a northern approach.

The current road system was initially constructed as a single-lane shot rock road used for transporting logging equipment and logs between island logging camps and log transfer facility (LTF) sites as well as to the sort yard in Thorne Bay. Logging is ongoing, and residents and visitors use the road system for commuting between communities, as well as subsistence and recreational travel. The road system is also used by visitors traveling in recreation vehicles (RVs). Projections by the Inter-Island Ferry Authority (IFA) are for increased RV usage in the next two decades, fostered by the accessibility provided by IFA vessels. Industrial traffic (in the form of log trucks, low-boys, and service equipment) is expected to continue on this road system



Prepared by Parametrix, Inc. File: elcap/plotamls/plots/fig1-041701-1.gra Date: June 04, 2001

accessing existing and proposed local manufacturing and barging infrastructure in Thorne Bay and Craig.

Existing roads are narrow, with curves and dips that limit sight distances. Surfaces are gravel, and ruts and potholes are common. For the most part, no warning signs or speed limits are posted, and many steep drop-offs are without guardrails.

RELATED FUTURE PROJECTS

Several future projects are proposed in the vicinity of the NPOW/El Capitan Road Improvements project. These projects are listed in Table 1-1, along with the location and anticipated timing for each project.

Table 1-1. Reasonable Foreseen Future Projects in the Vicinity of the NPOW/El Capitan Road Improvements Project

Proposed Project	Project Location	Lead Agency	Project Timing
Salvage windthrow and timber sales	Various locations along the project roads	USFS	Ongoing
Luck Lake timber sale in the Luck Lake watershed	Luck Lake vicinity	USFS	Harvest likely to begin in fall 2000
Coffman Cove road improvements on NFSR 23 and NFSR 30	South of the project corridor	WFLHD	Contract to be awarded in 2003
Thorne Bay Road 3R project and North Prince of Wales Road improvements from Thorne Bay Road to NFSR 23	From Control Lake to Thorne Bay Road and south of the project corridor	WFLHD, USFS	Contract to be awarded in 2001 and construction to begin in 2002
Inter-Island Ferry terminal construction in Coffman Cove harbor	City of Coffman Cove	IFA, FTA	Construction expected to begin in 2002 and be completed by 2003
Sandy Beach Road Improvements	Southeast of the project corridor	USFS	Target for construction to begin is 2004

WFLHD = Western Federal Lands Highway Division
FTA = Federal Transit Administration
IFA = Inter-Island Ferry Authority

FOREST PLAN DIRECTION

National Forest planning takes place at several levels: national, regional, forest, and project specific levels. The NPOW/El Capitan Road Improvements EA is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The Forest Plan embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest. The Forest Plan is

the result of extensive analysis, which is addressed in the Forest Plan FEIS and the May 1997 Record of Decision. Where appropriate, the El Capitan Road Improvements EA tiers to the Forest Plan final environmental impact statement (FEIS), as encouraged by 40 Code of Federal Regulations (CFR) 1502.20. This project is not affected by the Forest Service Roadless Area Conservation policy. The project area is entirely within roaded areas, and all realignments would also occur outside of designated roadless areas.

Forest Plan Land Use Designations

The Forest Plan land use designations (LUDs) are intended to guide management of National Forest System lands. Each designation provides for a unique combination of activities, practices, and uses. The El Capitan project includes land area within six LUDs (Figure 1-2). Non-National Forest land includes 13.9 miles of the road area for the proposed action and alternatives considered in this EA, and is concentrated in the vicinity of Naukati, NFSR 30 and Whale Pass, and at the intersection of NFSR 27 and NFSR 20 (in the vicinity of Twin Island Lake and east to El Capitan Passage). Provided below is a summary description of each LUD, along with the number of road miles within each LUD in parentheses.

Timber Production (24.4 miles)

This LUD occurs along the majority of NFSR 20, including large areas on the southern and northern portion of NFSR 20 and a small section in the central portion of NFSR 20 north of Sarkar Lakes. The goal of the timber production LUD is to maintain and promote industrial wood production from suitable timberlands, providing a supply of wood to meet society's needs.

Old-Growth Habitat (6.7 miles)

This LUD is distributed in two land areas crossed by project roads: northwest of non-federal land associated with Whale Pass, and in a land area between Neck and Sarkar lakes. Objectives include contributing to habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses, and maintaining components of flora and fauna biodiversity and ecological processes associated with old-growth forests. In this LUD, roads, facilities, and permitted uses are to be limited to those compatible with old-growth forest habitat management objectives.

Wild, Scenic, and/or Recreational River (2.6 miles)

This LUD occurs in the vicinity of Sarkar Lakes. A Wild, Scenic, or Recreational River LUD includes rivers eligible for this classification according to the Wild and Scenic Rivers Act (Public Law 90-542). The Sarkar Lakes system is divided into three segments for classification. Segment One meets guidelines for Recreational River classification, Segment Two meets guidelines for Wild River classification, and Segment Three meets guidelines for Scenic River classification. The segment that encompasses the road for this project is designated as a Recreational River. Roads are permitted to access, parallel, or cross the river. Guidelines are to design access roads to accommodate passenger cars and open them to public use. The Tongass Land Management Plan Appendix E depicts the Recreational River segment of the Sarkar Lakes.

Modified Landscape (1.2 miles)

This area is located at the southeast periphery of Neck Lake. The goal of this LUD is to provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments in the foreground distance zone.

Special Interest Area (0.4 mile)

This area is associated with the terminus of NFSR 15 at El Capitan Cave. The goals associated with this LUD are to provide for the inventory, maintenance, interpretation, and protection of the existing characteristics and attributes of areas with unique cultural, geological, botanical, zoological, recreational, scenic, or other special features. The El Capitan Cave is considered an outstanding example of karst resources on Prince of Wales Island that provides a unique opportunity for recreational public education, in addition to other karst resources that occur in this Special Interest Area. El Capitan Cave is the longest cave mapped to date in Alaska. The Special Interest Area, which contains the cave, was designated to protect the watershed associated with the cave and the alpine karst area on El Capitan Peak. The Special Interest Area surrounding El Capitan Cave contains many karst features, sinkholes, collapse features, vertical pits, and springs. The cave, access trail, and surrounding area provide a unique opportunity for recreational public education, observation, exploration, and an underground experience in a wild cave.

Remote Recreation (0.1 mile)

This LUD occurs directly west of Sarkar Lakes and is bounded by the existing location of NFSR 20 on the western edge (i.e., runs up to the east side of NFSR 20). It is represented by a small land area sandwiched between Old-Growth Habitat and Wild River LUDs. The Remote Recreation LUD provides unmodified natural settings for primitive types of recreation and tourism.

Desired Future Condition

The desired future conditions described for the Forest Plan LUDs, in conjunction with the other Forest Plan direction outlined above, provide the parameters for identifying and defining project-specific desired future conditions. The following desired future conditions will help guide management of the project to ensure consistency with the Forest Plan.

Timber Production

The desired future condition includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, with a road system providing access for timber management as well as recreation, hunting, fishing, and other public uses. Recreation opportunities associated with roaded settings are available. Wildlife habitats are predominantly in the early and middle successional stages. Roads may be kept open following timber harvest for public use.

Old-Growth Habitat

The desired future condition is for forested areas to attain old-growth forest characteristics and provide a diversity of old-growth habitat types, associated species, and ecological processes. Existing roads are managed to meet area objectives.

Recreational River

For this LUD, the desired condition is for the outstandingly remarkable values for which the river was designated to remain outstanding and remarkable. Ecological processes and changes may be affected by human uses. Recreation users have the opportunity for a variety and range of experiences in a modified but pleasing setting. Resource activities and developments may be present within the river corridor, and may dominate some areas. Interactions between users may be moderate to high.

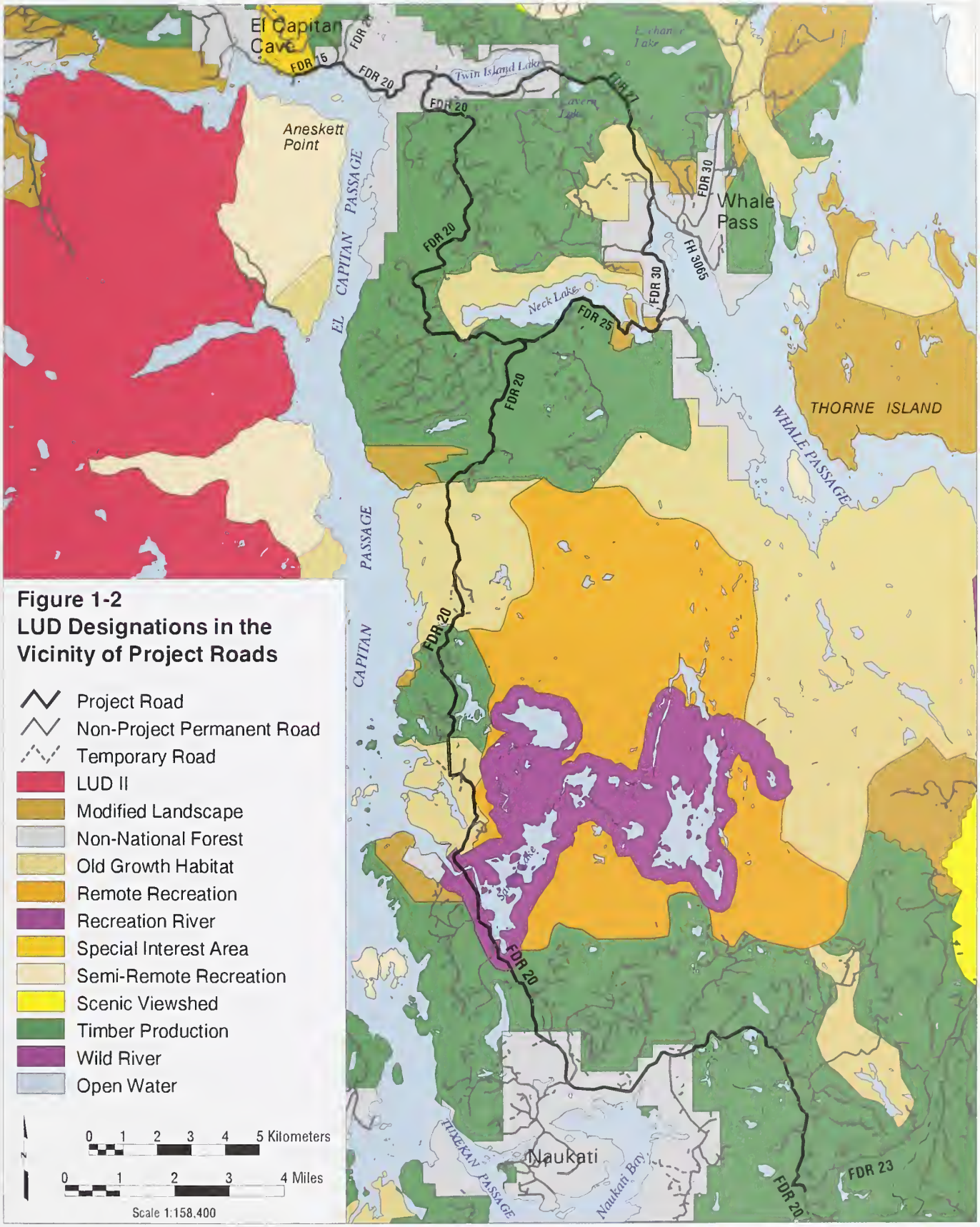


Figure 1-2
LUD Designations in the Vicinity of Project Roads

Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rpt_lud.gra created by rpt_lud.aml Date: June 04, 2001

Modified Landscape

The desired future condition accepts a somewhat modified landscape, but emphasizes scenic quality in foreground distance zones. Recreation opportunities associated with natural-appearing to modified settings are available. A variety of successional stages provide a range of wildlife habitat conditions. Existing roads are kept open for public use.

Special Interest Area

The desired future condition is for unmodified environments in which unique natural features are preserved. These areas would remain largely undisturbed by human uses or activities, except for localized interpretive purposes and, in some cases, recreation developments. Special Interest Areas provide quality opportunities for public study, use, and enjoyment. Roads may remain open if compatible with area objectives.

Remote Recreation

In areas designated for Remote Recreation, the desired future condition is to ensure that ecological processes and natural conditions are not noticeably affected by past or current human uses or activities. Interactions between users are infrequent. Motorized access is limited to traditional means: boats, aircraft, and snowmobiles. Facilities and structures are minimal and rustic in appearance. Existing roads are closed to motorized use, subject to the Alaska National Interest Lands Conservation Act (ANILCA).

PURPOSE AND NEED

The purpose of the El Capitan/North Prince of Wales Road Improvements project is to increase safety, user convenience, travel service, and to provide roadside enhancements in the north central portion of the island for all road users. The need for this project is based primarily on existing road and traffic conditions, the lack of roadside enhancements, and the projected increased traffic following establishment of the IFA system at Coffman Cove. This project will also support economic development opportunities throughout northern Prince of Wales Island. This project is consistent with the goals and objectives of the Forest Plan:

1. Develop and manage roads and utility systems to support resource management activities; recognize the potential for future development of major Transportation and Utility Systems.

2. Provide access to and through the National Forest for all users.

3. Manage and maintain roads to protect water, soil, fish, and wildlife resources.

4. Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.

5. Provide a range of recreation opportunities consistent with public demand, emphasizing locally popular recreation places and those important to the tourism industry.

PROPOSED ACTION

A "proposed action" is defined early in the project-level planning process. This serves as a starting point for the interdisciplinary team, and gives the public and other agencies specific information on which to focus comments. Using these comments (see discussion of issues later in this chapter) and information from preliminary analysis, the interdisciplinary team then develops alternatives to the proposed action. Action alternatives are discussed in detail in Chapter 2.

The Forest Service proposes to reconstruct existing single-lane roads between the El Capitan Cave and the junction of NFSR 20 with NFSR 23 to allow vehicles to pass safely in two directions, either by constructing inter-visible turnouts or by widening the roads to two lanes. The additional lane width would accommodate a range of vehicles and drivers that are not familiar with safe driving practices for single-lane roads. Bridges and culverts would be designed to improve fish passage. Karst features would be protected and avoided to the maximum extent practicable.

As part of this project, the Forest Service also proposes to enhance recreation facilities. This enhancement may be funded through Forest Highway Program funding or other sources. These projects include, but are not limited to, trailheads; road access to recreation facilities; restrooms; parking areas; boat launch ramps; interpretive signs; landscaping and site beautification; historic and archaeological preservation, planning, and research; environmental mitigation; recreational access; and accessibility (including handicapped accessibility). Sites being considered for this project include picnic areas and restrooms along the road corridor, boat launch sites, roadside cabins, parking areas, interpretive signs, and increased access to recreation sites. Enhancement projects would provide opportunities for more scenic views of the area and improved access to recreational facilities within the northern portion of Prince of Wales Island.

TIME FRAMES

Publication of the EA is planned for September 30, 2001. The public comment period will occur for 30 days following the EA publication, and the Decision Notice will follow the public comment period.

DECISIONS TO BE MADE

Based on the environmental analysis in this EA, the District Ranger will decide whether to construct, reconstruct, realign, or otherwise improve road conditions between the El Capitan Cave site and the intersection of NFSR 20 and NFSR 23 and how the improvements will be implemented. Decisions will be made in accordance with Forest Plan goals, objectives, and desired future conditions. The decision will include:

- The location, design, and scheduling of road construction activities.
- Mitigation measures and monitoring requirements.

- Whether there may be a significant restriction on subsistence uses, and if so, related findings and measures to minimize impacts on subsistence users.

PUBLIC INVOLVEMENT

The CEQ defines scoping as ". . . an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment at various stages of the EA process. Although scoping is to begin early, it is an iterative process that continues until a decision is made. In addition to the following specific activities, the NPOW/El Capitan road improvements project has been listed on the Tongass National Forest Schedule of Proposed Actions since January 4, 2001, available on the Internet. To date, the public has been invited to participate in the project as described below.

Scoping Brochure

The public was initially contacted for this project through a scoping brochure mailed to 369 addresses on January 4, 2001. The mailing list included residents, agencies, businesses, and environmental organizations. The scoping brochure described the project, its purpose and need, and included a project map, schedule, and opportunity for public comment.

Public Meetings

Public scoping meetings were conducted at five communities on Prince of Wales Island (Craig, Thorne Bay, Coffman Cove, Naukati, and Whale Pass), as well as at a Prince of Wales Community Advisory Council (POWCAC) meeting and an interagency meeting at the Thorne Bay Ranger District during the week of January 22 to January 26, 2001. The public was notified about these meetings through advertisements in the Ketchikan Daily News and the Island News two weeks prior to the public meetings. Agencies were notified through direct telephone contact. In addition to the public scoping meeting on the roads, attendees were provided an opportunity to suggest recreational enhancements for the Thorne Bay Ranger District, which also included some enhancements that could be associated with project road improvements.

Public Comments

During the public comment period, the Thorne Bay Ranger District received 24 public comments described in detail in Appendix A (Summary of Public Comments and Responses from Public Meetings). Comments were grouped into the following categories: (1) addressed through alternatives; (2) addressed by Forest Plan requirements or state and/or federal law; (3) addressed through Forest planning outside of the project; and (4) beyond the scope of this analysis. Concerns in Category 1 were used to define key issues for the project. Project issues that are addressed comprehensively through Forest Plan requirements and/or other regulations (Category 2), and that did not define the alternatives were evaluated in this EA. Category 3 concerns are addressed through Forest-wide programs and not as a project-related issue. Comments that are outside the scope of the National Forest planning process (Category 4) are also not addressed in this EA.

ISSUES

Most of the significant issues for the NPOW/El Capitan Road Improvements project were identified through public involvement activities described above. Internal scoping was also important in defining key issues. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and alternatives.

Issue 1: Whale Pass Access

Question
Will a paved road to El Capitan on NFSR 20 attract more visitors to Whale Pass and impact the existing roads including NFSR 25, 30, and 27?

Background
Residents of Whale Pass commented that improved road access to the El Capitan Cave would additionally attract tourists to Whale Pass because this community is the closest residential area to the cave. They believe that the single-lane unimproved road conditions to Whale Pass would result in continued road degradation as more vehicles drive this road, as well as an unpleasant driving experience due to the large number of potholes and gravel road conditions. They requested that a paved two-lane road be provided to Whale Pass (either through the southerly route [NFSRs 25 and 30] or through the northerly route [NFSR 27]).

Issue 2: Quality of Driving Experience

Question
Will road improvements result in an improved quality of driving experience on the road?

Background
The high annual precipitation characteristic of Prince of Wales Island and the existing gravel surface conditions on the existing roads result in road rutting and potholes. These potholes have a deleterious effect on residents' vehicles, and deter inter-island community visits and tourist use. Asphalt roads would aid in attracting more tourists to the island, allow for increased bicycle use, and help to avoid long-term vehicle damage.

Issue 3: Karst and Cave Protection

Question
Will road expansion affect karst areas?

Background
Karst is a comprehensive term that applies to the unique topography, surface and subsurface drainage systems, and landforms that develop by the action of water on soluble rock – in the case of Southeast Alaska, limestone and marble. The dissolution of the rock results in the development of internal drainages, which produce sinking streams, closed depressions, and other solutional landforms such as sinkholes, collapse channels, and caves (White et al. 1995). World-class karst resources have been identified on the north end of Prince of Wales Island, including the El Capitan Cave, the location of the termination point for Alternative 2. It is possible that road expansion or road realignments may occur in areas where karst resources are present.

Depending on the alternative selected, significant karst features could be affected by the project. Included would be caves, vertical shafts, sinkholes, and insurgences. These features can be identified by laser-based aerial photography and mapping, which will be conducted for this project during summer and early fall 2001, followed by road reconnaissance of the karst resources identified by mapping. Any road realignment, expansion, and construction would be designed to avoid and protect karst features in the vicinity of the project roads, and applicable guidelines and regulations would be implemented.

Issue 4: Wetland Protection

Question
Will the increased road width affect jurisdictional wetlands?

Background
Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. These transitional habitats occur between upland and aquatic environments where the water table is at or near the land surface, or where the land is covered by shallow water. Wetland plants can tolerate various degrees of flooding and grow in frequently saturated areas. Wetlands are common in Southeast Alaska, due to its maritime climate and high level of precipitation. The Army Corps of Engineers regulates wetlands through its Section 404 permitting process. The proposed road width expansion from an 18-ft width to a 24-ft (paved) or 28-ft (gravel) width, and the additional road clearing may affect adjacent wetlands either through fill or hydrologic changes to existing wetland areas. A permit would be necessary prior to road construction, with approved mitigation measures to protect wetland resources.

Issue 5: Sedimentation and Turbidity Effects

Question
Will sedimentation and turbidity increase from road construction and use?

Background
Road construction, improvement, and realignment involve the movement of earth materials and may cause potential erosion onto adjacent streams and lakes following rainfall events. Although Forest Plan standards and guidelines for the protection of water resources and best management practices (BMPs) will be followed throughout project construction and implementation, there is more potential for surface erosion during construction where streams are crossed or where roads are adjacent to streams and water bodies, such as lakes or intertidal areas. The existing roads require maintenance grading to clear rutting and potholes. This maintenance results in shifting fine sediments into adjacent streams in areas where roads cross streams, particularly on bridges. These fine sediments may also be transported into karst ecosystems, especially during rainfall events. Water quality effects could also occur from fuel spills and vehicle oil leaks.

PLANNING RECORD

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Thorne Bay Ranger District Office in Thorne Bay, Alaska. Other reference documents (such as the Tongass Forest Plan and the Alaska Regional Guide) are available at public libraries throughout Southeast Alaska, as well as at the Forest Supervisor's Office in Ketchikan, Alaska. The Forest Plan is also available on the Internet and CD-ROM.

Chapter 2
Alternatives

INTRODUCTION

This chapter describes and compares the alternatives considered by the Forest Service for the NPOW/El Capitan Road Improvements project. It includes a discussion of how alternatives were developed, describes the alternatives considered in detail, and compares alternatives by significant issue. Mitigation and monitoring efforts of the project are also summarized. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. For a better understanding of the effects of the alternatives by issue and other environmental considerations, readers should consult Chapter 3.

OVERVIEW

As part of the discussion of alternatives, the following sections describe specific road design elements and standards that will be taken into consideration as part of planning, design, and implementation for the alternatives. This information serves as the basis for understanding the construction activities that would be associated with the proposed action, to allow an evaluation of their potential effects on the environment.

ALTERNATIVE DEVELOPMENT PROCESS

Roads in National Forests are classified as either Administrative Forest Service Roads, Forest Highways, Public Forest Service Roads, or other roads. The road system for this project was developed to meet guidelines for Public Forest Service Roads. Public Forest Service Roads are designed with the following objectives:

- Passenger car access routes into or through the National Forests.
- Extensions or connectors to state, county, or Forest Highway systems.
- Key National Forest access routes to primary public destinations.
- "Open to public travel" National Forest routes.

The routes selected for this project meet these objectives, as opposed to Forest Highways (which serve local needs, private property, a preponderance of National Forest Service generated traffic) or Administrative Forest Service Roads (roads not continuously open or available for public use). Roads within the Public Forest Service Roads classification must meet the design standards applicable to the standards of the jurisdictional agency and must also meet the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets (2001 edition) and the Highway Safety Act.

2 Alternatives

Several routes on Prince of Wales Island were considered within the Public Forest Service Roads program, but the specific objective of this project's road system is to improve access to the forest resources on northern Prince of Wales Island. The NPOW/El Capitan Road Improvements project was developed in coordination with other ongoing, planned, or proposed road improvement projects in the Thorne Bay Ranger District. The road system evaluated provides transportation access among northern Prince of Wales communities, recreation sites, and National Forest lands for administrative, extractive, subsistence, and recreational uses.

This road construction will be designed in three phases:

- Phase I: Coffman Cove to Naukati Junction.
- Phase II: Naukati Junction to the intersection of NFSR 25 at Neck Lake.
- Phase III: From the junction of NFSR 25 at Neck Lake to its termination point.

Alternatives Considered but Eliminated from Detailed Study

No alternatives, other than those described below, were proposed or considered.

Items Common to All Alternatives

The action alternatives have several items in common. Road design elements and standards that must be considered under any action alternative are described below. Recreation enhancement measures are also proposed under each alternative, and are described in the following section. Mitigation measures and monitoring activities are items common to all alternatives and are listed at the end of the chapter.

Design Elements and Standards

Due to anticipated low average daily traffic values and use of the road by heavy logging equipment, road construction equipment, and multi-use passenger vehicles, high-speed, high-volume highway design standards are not appropriate for this project. This road is intended to function similar to a country road and not as a high-speed state highway. Consequently, the road will be designed as a minor rural collector and will meet AASHTO standards discussed on pages 423-433 of *A Policy on Geometric Design of Highways and Streets* (AASHTO 2001). The average daily traffic (ADT) on the roads has been 50 cars with occasional increases to 150 cars. The future projected ADT is 200 cars. AASHTO standards for minor rural collector roads and their relationship to the proposed action are discussed below in terms of design elements and standards.

Design Elements

AASHTO classifies design elements into five major categories: sight distance, horizontal alignment, vertical alignment, combination of horizontal and vertical alignment, and other elements affecting design. Design standards describe the physical characteristics (e.g., road running surface width, cut slope, fill slope, and road surface type) needed to meet the objectives of each design element. To simplify the application of design elements to road design and construction procedures, this discussion relates these elements to the desired design speed for

proposed road segments. Other resource protection elements pertaining to fisheries, water quality, wetlands, cultural resources, and karst features include sedimentation traps to protect water quality, diversion of runoff away from karst insurgences, and dispersing the runoff from the surfacing and ditch accumulation, among others. Low impact construction methods would be implemented in areas where sensitive resources are identified.

Sight Distance

Sight distance is the length of roadway ahead visible to the vehicle operator. At a minimum, this distance should be sufficient to enable a vehicle traveling at design speed to stop before reaching a stationary object in its path. AASHTO recommends that sight distance at every point along the roadway be at least that required for the below-average driver or vehicle to stop within this distance. It is anticipated that sight distance will play a major role in the design and construction/reconstruction of the project roads (e.g., design speeds, levels of excavation, and safety requirements).

Horizontal Alignment

Horizontal alignment is the term that describes the influence of road curvature on travel (design) speed and sight distance. Of specific concern is the ability to maintain stopping sight distance across horizontal curves. Obstacles, such as road cut banks and vegetation, commonly reduce sight distance below minimum stopping distances for given design speeds. Minimizing this effect often involves increasing road right-of-way clearing or cut bank excavation to meet minimum sight distance requirements.

Vertical Alignment

Vertical alignment is the term that describes the combination of road grade, changes in these grades, and associated vertical curves on a given road segment. This element can have a major influence on many aspects of a road project. Not only does vertical alignment affect sight distance and design speed, but it can also have significant influence on aspects such as drainage and surface erosion, and therefore maintenance costs. When road grades are in excess of 15 percent favorable and 11 percent adverse, vertical alignment tends to be the design element governing design speed.

Of further concern is the influence of vertical alignment on road surface material. Steep road grades may require the designer to pay special attention to the type of surfacing used to maintain road integrity and minimize maintenance costs through surface erosion.

Combination of Horizontal and Vertical Alignment

This design element combines the effects of both horizontal and vertical alignment. Effects of this design element are most profoundly shown in sight distance. Road design that does not adequately take this element into account can result in a disjointed sight effect. This occurs when a driver approaches the crest of a vertical curve, and looking over the crest, sees a horizontal curve on the other side of the vertical curve before seeing the road directly beyond the crest of the vertical curve. Not only does this significantly reduce sight distance, but it also can

pose a significant safety issue. Oncoming vehicles can be nearly unseen on a disjointed curve situation.

Proper design procedures that address the combination of horizontal and vertical alignment are essential to the success of a road project. Correcting road segments with disjointed sight effects can be very difficult and costly. Due to relatively steep slopes and dissected terrain along various segments of the project roads, disjointed sight effects will likely play a major role in design and construction.

Other Elements Affecting Design and Construction

These elements include drainage, erosion control and landscape development, signing and marking, and maintenance of traffic through construction areas. They tend to have much less impact on road geometry and more on overall road cost. Of these, it is anticipated that drainage and erosion control will result in the greatest cost impact on the project roads. Implementation of Forest Plan standards and guidelines, BMPs, and other mitigation measures needed to provide fish passage and protect water quality will result in design and construction practices that are significantly more costly than those that were originally employed during construction of the existing roads.

Design Standards

Two design scenarios were considered for construction/reconstruction of project roads. These scenarios and associated design standards include (1) two-lane road with aggregate gravel surface (referred to as a gravel road) and (2) two-lane road with asphalt-paved surface (referred to as a paved road). The location of the design standards by road segment is described under each alternative and summarized in Table 2-1.

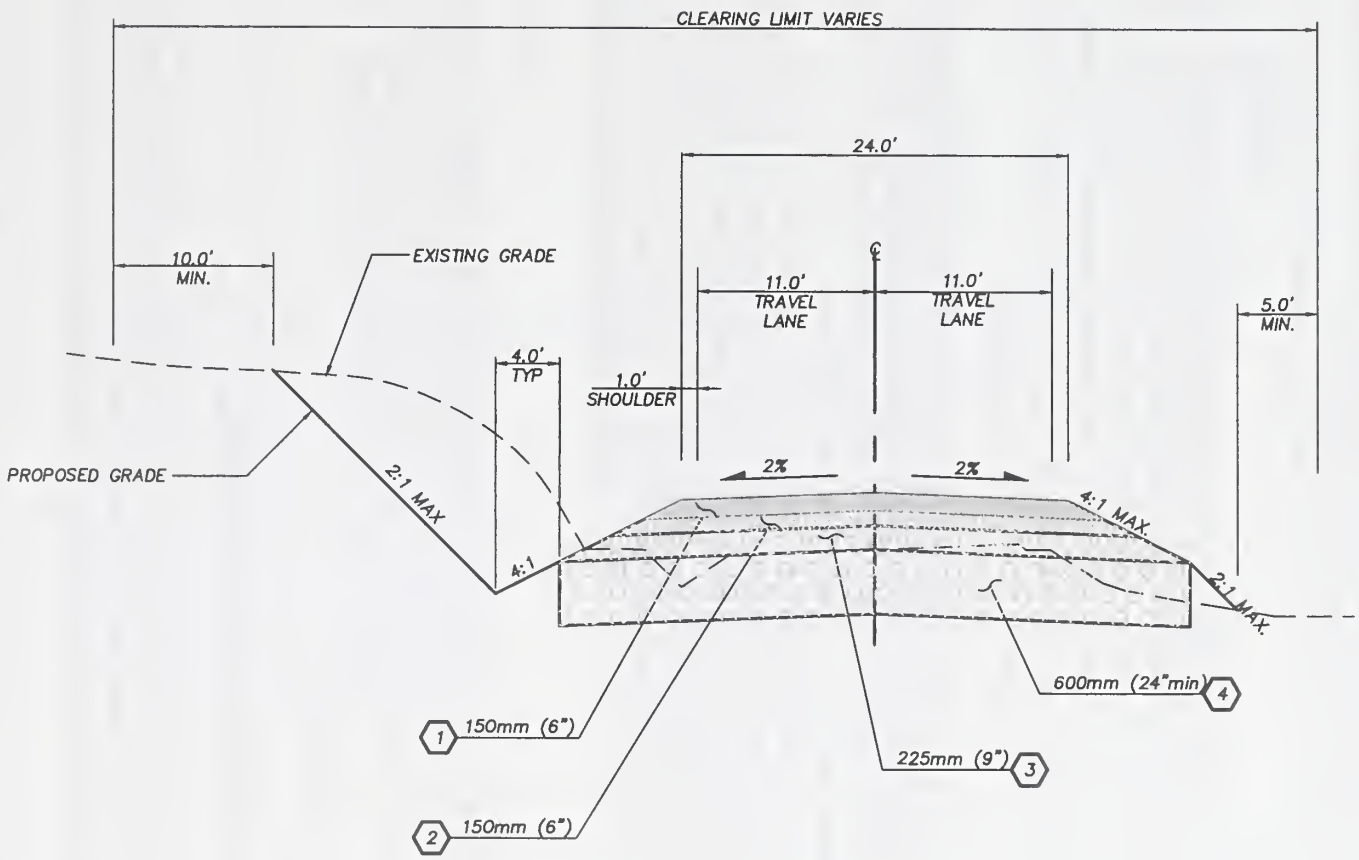
Lane Width

The existing one-lane roads that characterize all project roads (NFSR 20, 15, 25, 30, and 27) have various cleared widths dependent on the topography, environmental features, and earth materials (bedrock, wetlands, lake) adjacent to the roadside. Generally, the road width of these roads is 18 ft. This EA analysis assumes the new two-lane roadway would be 24 ft wide on paved segments. On segments not paved, the surface width would be 28 ft to allow for the addition of asphalt pavement in the future. Total cleared area would range from 61 to 128 ft wide, with an average width of 93 ft (Figure 2-1). Additional roadway width is anticipated for some sections of the roadway to provide for focused viewing or parking opportunities for new or expanded recreational opportunities (such as biking, hiking, wildlife viewing, and fishing).

A detailed analysis for the project roads was conducted to determine the extent of road clearing needed based on specific environmental road features, amount of cut-and-fill area, clearing and grubbing, excavation, and waterside construction. The gravel and paved road sections would affect the level of construction effort required, the extent of clearing and ground disturbance, and the number of drainage structures that would need to be replaced. A preliminary engineering cost analysis of the level of effort (low, medium, high) needed to construct each segment of road

CONSTRUCTION NOTES

1. HOT ASPHALT CONCRETE PAVEMENT (ON PAVED SEGMENTS)
2. AGGREGATE BASE, GRADING D-1
3. AGGREGATE SUBBASE
4. SUBEXCAVATION BACKFILLED W/SHOT ROCK



FILE: 24371301
DATE: 06/01/01

Figure 2-1
Typical Improved Road Cross Section

to achieve safe sight distances and acceptable horizontal and vertical alignment was developed for this EA. This analysis takes into account factors such as underlying geology, soils, slopes, horizontal and vertical controls, and streams that would need to be addressed in each segment of road under each alternative. Not included is wetland or other environmental resource mitigation that may be needed for the project roads. More detailed site-specific field studies will be needed prior to estimating these mitigation costs.

Drainage Structures and Bridges

All drainage structures would be replaced, either to improve fish passage, or because stream topography does not allow for culvert extensions. No bridges on the proposed roads will need replacement, and all bridges can accommodate a two-lane road.

Road Surfacing

Two surfacing options, crushed aggregate rock for gravel roads and hot mix asphalt concrete for paved roads, were considered for use in all reconstruction and construction scenarios. There is little effective difference in the design speeds of gravel and paved surfaced roads for any given alignment, excepting under specific weather (wet and dry surface) and road maintenance conditions. The primary differences between aggregate and asphalt are related to initial costs, maintenance costs, and environmental considerations.

The lower initial cost of aggregate gravel surfacing is paired with higher maintenance costs incurred through grading and periodic resurfacing as aggregate breaks down or is lost. Aggregate can be manufactured close to the job site using a portable rock crusher with rock obtained from pits located adjacent to the existing road system.

Although initial costs are higher, asphalt surfacing has several advantages over aggregate surfacing. A smoothed travel way, with painted centerlines and fog lines, enhances safety and the quality of the ride for vehicle occupants. An asphalt surface requires less maintenance than an aggregate surface, and is more resilient to the effects of snowplows during snow removal operations. A portable plant would be required to produce asphalt since a permanent plant is not available locally.

Recreation Enhancements

Each action alternative includes recreation features to improve visitor enjoyment of the area. These enhancements include scenery enhancements, picnic areas, restrooms, trail access, parking, and interpretive signs. The type and location of additional recreation enhancements vary among alternatives, corresponding to the location of road segments targeted for improvement under each alternative.

ALTERNATIVES CONSIDERED IN DETAIL

After identifying the key issues for the project, the interdisciplinary (ID) team reviewed the project roads and developed alternatives that would directly respond to the key issues. One no-action and three action alternatives were identified that encompass the five project roads. All

action alternatives include a Common Route (beginning at the intersection of NFSR 23 and 20 and extending north to the intersection of NFSR 20 with NFSR 25) and additional road segments referred to as Segments 1 to 4 that include NFSR 20, 25, 30, 27, and 15 (Figure 2-2).

Treatment options for each segment within each alternative were selected based on several factors associated with the key issues. These included consideration of population centers, recreation sites, and traffic volumes; types of current and expected use (e.g., recreation, local, or hauling); junctions between higher-use and lower-use segments; effects on natural resources (e.g., fish, water quality, wetlands, and wildlife); maintaining the forest-road experience in some segments; and providing a suitable surface for snow-removal efforts, if desired by the municipalities. Treatment options, or design scenarios, are summarized in Table 2-1.

Table 2-1. Summary of Treatment Options Selected for Road Segments by Action Alternative

	Alternative 2[1]	Alternative 3[1]	Alternative 4[1]
Common Route	Paved 2-lane	Paved 2-lane	Paved 2-lane
Segment 1	**	Paved 2-lane	**
Segment 2	**	**	Gravel 2-lane
Segment 3	Paved 2-lane	**	**
Segment 4	Paved 2-lane	**	Gravel 2-lane

** No treatment to these road segments.

[1] Treatment includes culvert replacement; guard rails at steep embankments; roadway realignments to straighten the road and avoid sensitive resources including wetlands, cultural resources, and karst; and warning/regulatory signs.

Each of the action alternatives described below is designed to meet the purpose and need for the project (as described in Chapter 1), while emphasizing different resource values. The ID team based the development of the alternatives on a review of Forest-wide planning documents, plans developed specifically for the Thorne Bay Ranger District, natural resource data compiled in the Tongass National Forest geographic information system (GIS) database and other recent environmental documents, comments provided during the scoping process, and a field visit to the project area to examine existing road conditions.

Alternative 1

NEPA requires analysis of a no-action alternative. The no-action alternative would maintain the existing one-lane road with pullouts and would not address the existing road deficiencies. The existing narrow width, steep side slopes, substantial horizontal alignment, blind corners, and inadequate culverts would remain under the no-action alternative.

With increased traffic levels, including tourists unfamiliar with the road corridor, the condition and safety of the existing road is expected to deteriorate. Periodic grading of the gravel surface would continue. However, grading depletes the gravel surface, creating the necessity for expensive gravel resurfacing. Without the addition of new gravel, normal maintenance techniques and expenditures would not keep the road in suitable condition for passenger car traffic. Maintenance practices would continue to be less than cost-effective, and deficiencies in the road that cannot be corrected through maintenance measures would gradually worsen. The

culverts along the preferred alternative route that do not provide fish passage would remain, thus continuing to limit the habitat available to various fish species. Other culverts could also become too short or could become blocked as routine grading activities gradually widen the existing road. The floating corduroy roads through wetlands would continue to cause consolidation of the underlying soft organic soils, resulting in embankment settlement. Eventually, these areas will need to be reconstructed to maintain a safe, passable road surface.

In recent years, Prince of Wales Island has seen an increase in tourism, which is expected to continue. The existing road is too narrow for safe use by RVs. Under the no-action alternative, no widening of the road system would occur and no pullouts for recreational access to the National Forest lands would be provided. The no-action alternative would not address the purpose and need of improved recreational access to National Forest lands.

Action Alternatives

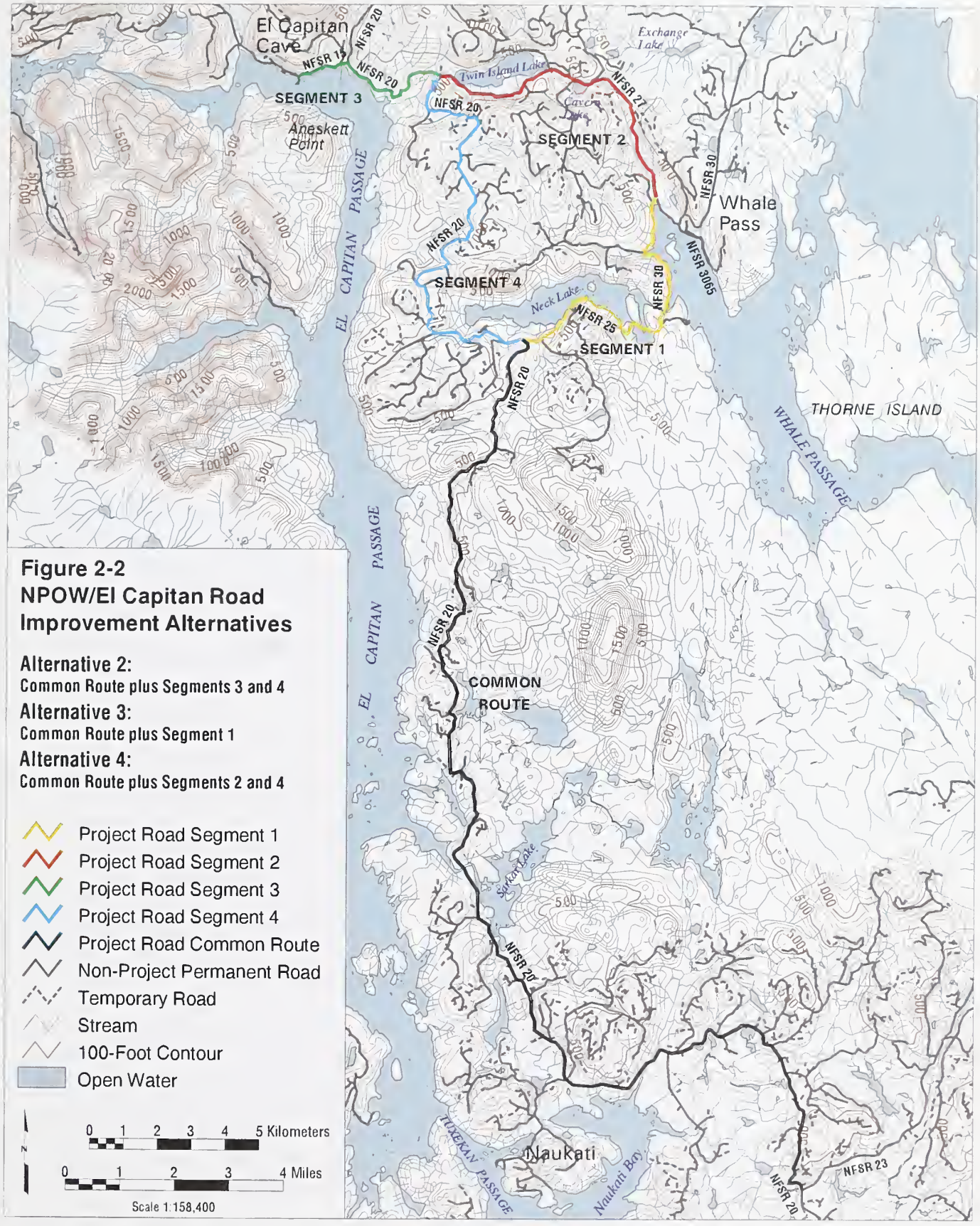
Each action alternative includes the Common Route, as well as an additional segment(s) that will provide improved transportation access to either El Capitan Cave (Alternative 2) or Whale Pass (Alternatives 3 and 4). The Common Route and segments are shown in Figure 2-2 and consist of:

- Common Route: NFSR 20 from its junction with NFSR 23 to its junction with NFSR 25 (24.5 miles).
- Segment 1: NFSR 25 and 30 beginning with NFSR 20's junction with NFSR 25 and ending at NFSR 30's junction with NFSR 27 (6.4 miles).
- Segment 2: NFSR 27 beginning with its junction with NFSR 20 and ending with its junction with NFSR 30 (6.1 miles).
- Segment 3: NFSR 20 and 15 beginning with NFSR 20's junction with NFSR 27 and ending at the location where NFSR 15 turns into the El Capitan Cave parking area (3.3 miles).
- Segment 4: NFSR 20 beginning at its junction with NFSR 25 and ending at its junction with NFSR 27 (9.0 miles).

Total roadway length considered under the action alternatives is 49.3 miles.

Alternative 2 – El Capitan Alternative

This alternative consists of a **Common Route** associated with NFSR 20, as well as **Segment 4** (NFSR 20 from its intersection with NFSR 25 to its intersection with NFSR 27) and **Segment 3** (NFSR 20 from its intersection with NFSR 27 to NFSR 15 at El Capitan Cave). This alternative does not treat Segment 1 or Segment 2. The entire road corridor would be upgraded to a paved two-lane road. Minor alignment shifts would be required along the route to meet design criteria, avoid wetland and other significant resource impacts, and provide road pullouts for recreational access. Realignment options are limited by steep slopes uphill from the roadway (cut slopes), karst features, and areas of extensive bedrock. All of the culverts along this route would be



Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rpt_rdsegs-2-2.gra created by rpt_rdsegs.aml Date: July 06, 2001

replaced. Replacement culverts at tributary crossings that provide fish habitat would be designed to provide adequate fish passage and protect karst resource values. Undersized drainage culverts would be replaced with larger culverts, and roadside ditches would be established to provide improved drainage.

Recreation areas that have the potential for enhancement funding under Alternative 2 include the following, as shown in Figure 2-3:

- Common Route: A new Naukati Creek picnic area; Sarkar Lake interpretive signs; Deweyville Trail parking and trail improvements; and Tunga Lake restrooms and boat launch.

- Segment 3: El Capitan Cave new day-use area at the old LTF site, improved parking, interpretive signs, new campground, and boat launch.

- Segment 4: Additional recreational amenities are possible at the recently constructed Beaver Falls Interpretive Trail including additional interpretation. Other potential improvements include an interpretive trail associated with River's End Cave.

This alternative would increase speed, safety, and convenience of travel on the primary road transportation corridor in the northern portion of Prince of Wales Island. Paving of this road segment would provide a surface suitable for plowing, which would improve year-round travel among the northern communities, if a community chooses to undertake this maintenance. This alternative would provide a general-purpose road, well located for haul traffic. This alternative does not include road improvements to NFSR 25, 30, or 27 that represent the southern (NFSR 25, 30) and northern (NFSR 27) transportation routes to Whale Pass from NFSR 20.

The estimated construction cost for this 36.8-mile alternative is approximately $61 million.

Alternative 3 – South Whale Pass Alternative

Similar to Alternative 2, Alternative 3 proposes improvements of NFSR 20, which consists of the **Common Route** from the junction of NFSR 20 and 23 extending north to the junction of NFSR 20 with NFSR 25. At this junction, Alternative 3 includes **Segment 1**, where NFSR 25 turns east along the southern periphery of Neck Lake to NFSR 30, then turns north up to NFSR 30's junction with NFSR 27, where the alternative terminates. This alternative does not treat Segments 2, 3, or 4. These roads would be upgraded to paved, two-lane roads and provide the speed, safety, and travel convenience as described under Alternative 2. Communities in the general area would have the option of snow-plowing the roads during the winter months.

Minor alignment shifts would be required along the route to meet design criteria, avoid wetland impacts, and provide road pullouts for recreational access. Realignment options are limited by steep slopes uphill from the roadway (cut slopes) and areas of extensive bedrock. All of the culverts along this route would be replaced. Replacement culverts at tributary crossings that provide fish habitat would be designed to provide adequate fish passage and protect karst resource values. Undersized drainage culverts would be replaced with larger culverts, and roadside ditches would be established to provide improved drainage. This alternative includes

roadway segments adjacent to Neck Lake and Whale Passage. Extensive design, construction, and mitigation efforts would be required to ensure protection of the lake and passage from road-related construction impacts.

Recreation areas that have the potential for Public Highway funding under Alternative 3 include the following:

- Common Route: A new Naukati Creek picnic area; Sarkar Lake interpretive signs; Deweyville Trail parking and trail improvements; and Tunga Lake restrooms and boat launch.

- Segment 1: Neck Lake boat launch and restrooms.

This alternative would not include road improvements of NFSR 20 north of its intersection with NFSR 25, 15, or 27.

The estimated construction cost for this 30.9-mile alternative is approximately $47 million.

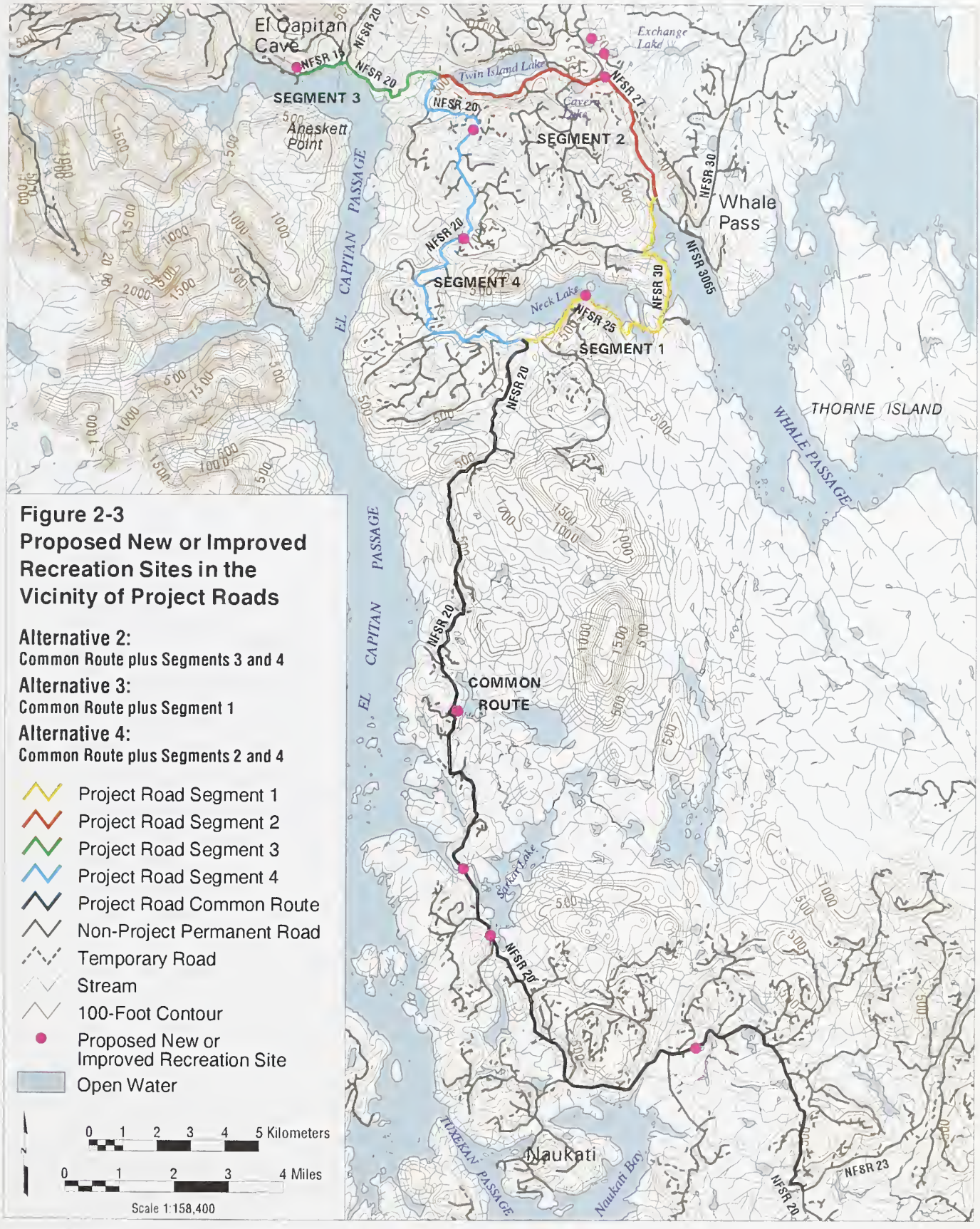
Alternative 4 - North Whale Pass Alternative

Alternative 4 includes the **Common Route**, as well as **Segment 4**, both associated with NFSR 20. Alternative 4 would begin at NFSR 20's intersection with NFSR 23 and extend north to its intersection with NFSR 27. At this junction, Alternative 4 would then include **Segment 2**, where NFSR 27 travels east and south of Twin Island Lake until its junction with NFSR 30, where the road would terminate. This alternative does not treat Segments 1 and 3. Road improvements would include a two-lane paved road along the Common Route portion of NFSR 20 (24.5 miles) and a two-lane gravel road along the Segment 4 portion of NFSR 20 (9.0 miles) and NFSR 27 (6.1 miles). Minor alignment shifts would be required along the route to improve safety, avoid wetland impacts, and provide road pullouts for recreational access. Realignment options are limited by steep slopes uphill from the roadway (cut slopes) and extensive areas of bedrock and karst features. All of the culverts along Alternative 4 would be replaced. Replacement culverts at tributary crossings that provide fish habitat would be designed to provide adequate fish passage and protect karst resource values. Undersized drainage culverts would be replaced with larger culverts, and roadside ditches would be established to provide improved drainage.

Recreation areas that have the potential for Public Highway funding under Alternative 4 include the following:

- Common Route: A new Naukati Creek picnic area; Sarkar Lake parking area, boat launch, trail improvements, and interpretive signs; Deweyville Trail parking and trail improvements; and Tunga Lake restrooms and boat launch.

- Segment 2: Sinkhole Lake small walk-in campground and interpretive trail, Starlight Cave viewing deck and parking area, and Cavern Lake restrooms and improved day-use area.



Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rpt_rs-prs.gra created by rpt_rs-prs.aml Date: July 06, 2001

- Segment 4: Additional recreational amenities are possible at the recently constructed Beaver Falls Interpretive Trail including additional interpretation. Other potential improvements include an interpretive trail associated with River's End Cave.

This alternative would provide more paved direct access to El Capitan Cave than Alternative 3, although less access than Alternative 2, which includes NFSR 15 (the road directly to the cave). Alternative 4 does not include upgrading NFSR 25 (the southern route to Whale Pass).

The estimated construction cost for this 39.6-mile alternative is approximately $53 million.

COMPARISON OF ALTERNATIVES BY ISSUE

Issues identified during public scoping are discussed by alternative below, with a summary comparison provided in Table 2-2.

Table 2-2. Comparison of Alternatives by Issue, Output, and Effect

Issue	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Roads affected	–	NFSR 15, 20	NFSR 20, 25, 30	NFSR 20, 27
Total miles of road treated	–	36.8	30.9	39.6
Miles of paved road	–	36.8	30.9	24.5
Miles of gravel road	–	0	0	15.1
Upgrades a segment serving Whale Pass?	–	No	Yes	Yes
Quality of driving improved?	No	Yes	Yes	Yes
Karst locations within 300 ft of project roads	None	20	2	28
Wetland impact area (acres)	None	136.7	130.0	140.8
Number of Class I and II streams crossed	–	41	47	47
Feet of roads that cross or are adjacent to (within 300 ft of) freshwater lakes and saltwater areas	–	21,105	39,535	17,552
Total cost in millions	–	**61**	**47**	**53**

ISSUE 1: WHALE PASS ACCESS

Each of the action alternatives provides increased access to Whale Pass through improved road conditions, although in differing amounts, travel times, and degree of driver safety. Alternative 2 would provide a paved road along NFSR 20, which is needed for driving to Whale Pass from the central and southern portions of the island where all other roaded communities occur, but would not provide a paved road on NFSR 25, 30, or 27, the routes that provide direct access to the community of Whale Pass. With no direct paved access to this community, socioeconomic benefits from increased resident and non-resident usage of paved roads under Alternative 2 would likely not accrue to Whale Pass. However, access to Whale Pass is also being considered

as a separate project, and is not a primary objective of the North Prince of Wales/El Capitan road improvements project.

Alternative 3 would provide the optimum Whale Pass access among the three action alternatives. Road improvements include a two-lane paved road on NFSR 20, 25, and 30. Both visitors and residents would benefit from the paved roads, as NFSR 25 and 30 provide the shortest route from Whale Pass to the central and southern portions of the island.

Alternative 4 would also provide direct access to Whale Pass through NFSR 20 and 27. However, this route is north of Whale Pass, and would result in a longer route for community residents when traveling to southern Prince of Wales Island. Visitors may use the route when arriving from the more northerly portions of the island. However, residents and visitors arriving from the central and southern portions of the island may opt to use NFSR 25 and 30 to access Whale Pass because this latter route is shorter and would require less travel time.

Issue 2: Quality of Driving Experience

Alternative 2 would provide 36.8 miles of improved driving experience that includes the following features: two-lane paved road surface with centerlines and road straightening realignments to allow a 35-mph speed limit, increased views of the roadway from roadside vegetation clearing, guardrails along steep embankments, and regulatory and warning signs along the roadway. This improved road would be used by residents and visitors traveling on the northern portion of the island.

Alternative 3 would provide 30.9 miles of improved driving experience, which includes the features described under Alternative 2. However, the paved road would only include a portion of NFSR 20 (24.5 miles) compared to Alternative 2, and would additionally include portions of NFSR 25 and 30 (6.4 miles). Residents and visitors to Whale Pass would benefit from the improved portions of NFSR 25 and 30.

Alternative 4 would provide 39.6 miles of improved roads, of which 24.5 miles are paved on NFSR 20 and 15.1 miles are not paved, but constructed as two-lane gravel roads with other similar features as described under Alternative 2. The unpaved portion includes 9.0 miles of NFSR 20 and 6.1 miles on NFSR 27. Fewer travelers would benefit from this alternative, as the road is a more northerly option to Whale Pass. Whale Pass residents traveling to southern areas may not use this northerly route option. Furthermore, NFSR 20, between the junction with NFSR 25 and 27, would only be upgraded to a two-lane gravel road, which may develop ruts and potholes that would discourage driver use.

Issue 3: Karst and Cave Protection

Alternative 2 occurs near areas of known karst formation in the northern portion of the route along NFSR 20 and 15. This alternative also provides recreational access to caves open for public education and enjoyment at El Capitan Cave and Beaver Falls Karst Interpretive Trail. A karst field survey will be conducted during summer 2001 to locate sensitive karst resources. If high-value karst resources are identified, the road will be realigned to avoid impacts, or mitigation measures will be developed to ensure karst resource protection.

Alternatives 2 and 4 have the highest potential to affect karst features, stream insurgences, and/or springs in the vicinity of project roads. These resources include caves, sinkholes, collapsed basins, resurgences, and insurgences. Most of these resources occur in the vicinity of Segment 4.

Alternative 3 has the least likelihood of affecting karst resources because the alternative is south of the area where most of the karst resources have been identified to date on Prince of Wales Island. However, field surveys of the route would be necessary to ensure that karst resources are protected. This roadway does not provide access to any cave areas developed for recreational use.

Alternative 4 has the greatest likelihood of disturbing significant karst features because it includes both Segments 4 and 2 where most of the known significant karst resources occur. Any blasting or road disturbance in the area could potentially damage these resources. This route also has the potential for damage to other unknown karst resources in the roadway vicinity. Laser-based aerial mapping and field surveys will be necessary to ensure protection of the karst resources in the vicinity of the roadway corridor. This alternative also provides direct road access to four cave areas (Beaver Falls, Sinkhole Lake, River's End Cave, and Cavern Lake) developed for recreational education and enjoyment. The improved road conditions on NFSR 20 will also provide access to NFSR 15, the roadway that provides direct access to El Capitan Cave.

Issue 4: Wetland Protection

From preliminary analysis, Alternative 2 would result in the permanent conversion of 15 acres of wetlands to nonwetlands where the wetland area would become paved roadway, and 122 acres of wetlands that may be permanently converted from wetlands to provide a roadside clear zone. The clear zone may include ditches, roadside turn-outs, side-slopes, and construction staging areas with heavy equipment. Total wetland impact areas for Alternative 2 would be about 137 acres. From field surveys to be conducted in summer 2001, high-value wetlands for all alternatives would be avoided through road realignments, and a wetland mitigation plan would be prepared in compliance with Sections 404 and 401 of the Clean Water Act and approved by the U.S. Corps of Engineers. Permits for wetland impacts would be obtained prior to any road construction activities. Paving the roads would increase stormwater runoff following rainfall events into streams, but would also decrease sedimentation from road gravels into wetlands.

Alternative 3 would result in slightly less impacts (130 acres) to wetlands. Alternative 4 would have the greatest effect to wetlands, with a total impact area of 141 acres. In addition, the gravel roads planned for Segment 2 would increase the potential of fine sediments entering wetlands.

Issue 5: Sedimentation and Turbidity Effects

Culvert replacement and road paving will aid in reducing the existing sedimentation and turbidity to adjacent streams and lakes that result from travel on gravel roads. Over time, the gravel is broken down and carried off the road surface during high levels of precipitation. The gravel passes into adjacent ditches, streams, and lakes as fine sediment that can cover fish and vegetative habitat. Karst resources are also impacted by sedimentation effects, including water diversion and changes in water quality. Turbidity occurs during high precipitation events when

the sediment becomes suspended in the water column. Gravel surface roads offer some advantage in immediately absorbing some water below the road surface during rainfall events.

Over the long term, Alternative 2 will reduce the potential for sedimentation because the roads will be paved, and there will be no gravel that would enter adjacent streams and lakes. However, a paved surface will not provide for immediate absorption of precipitation. Rain on paved roads will immediately become runoff to the adjacent streams and lakes, which may carry pollutants from vehicles. Because the roads will not be heavily traveled, the effects from surface water runoff are expected to be less than from sediments originating from gravel-surface roads. Road construction may also result in sedimentation and turbidity impacts to adjacent streams and lakes, although this impact would occur only during the short term and these impacts would be reduced through implementation of BMPs and a sediment control and erosion plan developed for the project. The 41 Class I and II streams and the adjacent Sarkar and Tunga lakes would be affected by any sedimentation and turbidity occurring on Alternative 2.

Alternative 3 would have road improvements similar to Alternative 2. However, sedimentation and turbidity effects are expected to be greater because NFSR 25 occurs alongside Neck Lake and NFSR 30 is alongside Whale Passage. This route has an increased potential for sedimentation and turbidity to these water bodies. Alternative 3 would also result in the crossing of 47 Class I and II streams.

Alternative 4 is unique in that the portion of NFSR 20 in Segment 4 and NFSR 27 in Segment 2 would not be paved and would remain a gravel roadway. Similar to Alternative 3, this alternative would cross 47 Class I and II streams. However, the potential for sedimentation impacts is less than Alternative 3 because less of the roadway is immediately adjacent to lakes, and no portion of the roadway is adjacent to intertidal areas. Alternative 4 would likely have greater sedimentation and turbidity effects than Alternative 2 because the route is longer, more Class I and II streams are crossed, and the route is immediately adjacent to portions of Twin Island Lake and Cavern Lake.

PREFERRED ALTERNATIVE

The preferred alternative is Alternative 2, which includes the Common Route and Segments 3 and 4.

MITIGATION MEASURES

The Forest Service uses many mitigation and preventive measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project. These measures come from or link to the Forest Plan, and continue through all phases of subsequent management related to the project. These measures, called Forest Plan standards and guidelines, are described below. In addition to standards and guidelines and BMPs, specific mitigation measures may be recommended for activities associated with a specific alternative. Specific measures are included in Chapter 3, following resource discussions about the effects of each alternative.

Forest Plan Standards and Guidelines

The following items are listed to highlight some of the key mitigation measures, findings, or processes applied to the project that are common to all alternatives.

Beach and Estuary Fringe

The beach and estuary fringe is an area 1,000 ft inland from mean high tide around all marine coastline. Roads are to be located outside the fringe when possible.

Fish and Marine Habitats

Forest Plan standards and guidelines for riparian areas are applied to all fish streams within the project area, and to non-fish-bearing Class III streams that flow into Class I and II streams (anadromous and resident fish streams, respectively). Riparian Management Areas are areas of special concern to fish, other aquatic resources, and wildlife. These areas are delineated according to the process group direction in the Riparian forest-wide standards and guidelines.

Heritage Resources

A cultural resource field survey and inventory will be conducted on the project roads during summer 2001. The Forest Service will seek concurrence with the Alaska State Historic Preservation Officer and other interested parties that no sites eligible for the National Register of Historic Places will be affected by any of the alternatives.

Recreation

The Forest Plan seeks to provide opportunities and programs appropriate to the forest environment that help participants experience and understand nature. Recreation enhancements proposed under any of the alternatives will be designed to complement commercial public services within communities or on private or other public land. Several projects are proposed that will support boater access, consistent with Forest Plan standards and guidelines.

Scenery

Forest Plan standards and guidelines for scenery are based on visual quality objectives (VQOs), which provide direction for landscapes within each LUD. The long-term desired future condition for a specific area is the maintenance of a visual quality level that is at least as high as the adopted VQO for that area. VQOs are applied to any activity, including road construction or reconstruction, that has the potential to affect the visual character of the landscape.

Soils, Water Quality, and Wetlands

Road locations avoid slopes greater than 67 percent, unstable areas, and slide-prone areas where it is feasible to do so.

Road construction or reconstruction will be designed to avoid high value wetlands and minimize impacts on all wetlands. Jurisdictional wetland delineation will be completed during the summer of 2001 to evaluate wetland impacts and design a suitable mitigation plan.

Subsistence

All alternatives have been evaluated for effects on subsistence, according to ANILCA Title VIII, Section 810.

Threatened, Endangered, and Sensitive (TES) Species

Standards and guidelines will be applied as needed to avoid adverse effects on listed or sensitive species. A biological assessment and evaluation (BA/BE) for fish and wildlife has been prepared in association with this EA to identify TES species that may be affected by this project. No federally listed threatened or endangered fish or wildlife species are known to be present within the vicinity of the project roads. Humpback whales and Steller sea lions use marine waters surrounding Prince of Wales Island. No road construction or maintenance activities would occur in marine waters. Surveys for TES plants will be conducted during summer 2001 to define site-specific protection measures that should be implemented if TES plants occur in the project area. A BA/BE for plants will be prepared following these field surveys. This project is not expected to impact any TES species or affect critical habitat of these species.

Karst Resources

Laser-based aerial mapping and photography is planned to occur on the project roads during summer and early fall 2001, followed by field reconnaissance to identify and protect the karst resources within the vicinity of the project roads. Significant karst resources will be identified within the roadway corridor, and the road will be realigned or mitigation will be developed to protect the karst resources. The resource inventory and mitigation plans will be in accordance with the Cave Resource Protection Act of 1988 and Forest Plan standards and guidelines. The effort would include dye tracing to evaluate effects of road construction on recharge areas, geotechnical investigations to determine road stability in karst areas, realigning the road to avoid significant karst features (caves, vertical shafts, sinkholes, or insurgences), and ensuring that water is not diverted to or from karst features. Protection measures may include avoiding construction over karst features, prohibiting water diversion to or from karst resources, culvert placement and density, reducing erosion and sediment transport from the road surface and cutslopes, revegetating cut-and-fill slopes, erosion prevention, and restrictions on blasting locations. Rock quarries would not be developed in the vicinity of karst resources without adequate site survey and design. Quarries would also be properly closed after abandonment.

Wildlife Habitat

Standards and guidelines will be applied to protect important habitat and minimize the risk of disturbance during construction.

Best Management Practices (BMPs)

Water Quality

BMPs are designed to prevent or reduce the amount of pollution from nonpoint sources or other adverse water quality impacts while meeting other goals and objectives. BMPs are standards to be achieved, not detailed or site-specific prescriptions or solutions. BMPs, as defined in the USDA Forest Service Soil & Water Conservation Handbook, are mandated for use in Region 10.

Construction in Wetlands

Road realignment would avoid all high-value wetlands and crossing of other muskegs and wetlands if possible, while still adhering to controlling road design elements and standards. Where muskegs are crossed, the road would be constructed to allow the natural cross drainage to be maintained.

A commonly used road construction technique is to float the road across the surface of a muskeg. A layer of rock several feet deep is placed directly on the undisturbed sod/root mat, or if especially soft, on a log corduroy or geotextile base. Settlement of the floating subgrade over the years varies depending on the depth of the underlying muskeg. The flexible nature of the floating subgrade is adequate for aggregate surfaced roads that can be periodically graded back into shape and resurfaced following settling. However, the irregular settling makes this construction technique unsuitable for use in supporting an asphalt paved road surface.

A stable subgrade for an asphalt-paved road across muskeg is achieved by excavating unsuitable material down to a stable base of competent material and backfilling, usually with shot rock. Excessively deep muskegs are partially excavated and backfilled with rock.

Steep Slopes

Where side slopes are too steep to support a fill slope, the entire roadbed must be built on an excavated bench. This usually occurs on slopes in excess of 50 percent. Excavated material is hauled to a stable waste site or placed in portions of the road requiring fill material, thus avoiding side casting on steep slopes. Full bench cuts typically result in high cut banks, exposing a significant area of mineral sole to erosion potential. In these situations, appropriate erosion control measures should be employed. High cut banks can also have high visual impact.

Construction Timing

Reconstruction operations should be timed to adhere to Alaska State Statute Title 16 regarding in-water work. Timing restrictions will likely be necessary in areas near anadromous fish streams and in areas where cutbanks are planned to protect soils from erosion that could otherwise occur during periods of high rainfall.

Traffic Control/Road Closure During Reconstruction

Public access to roads may be restricted, and some roads may be closed to public use during reconstruction operations.

Monitoring

The National Forest Management Act requires that National Forests monitor and evaluate their forest plans (36 CFR 219-11). Chapter 6 of the Forest Plan includes the monitoring and evaluation activities to be conducted as part of Forest Plan implementation. The three categories of Forest Plan monitoring include:

- **Implementation Monitoring**: Used to determine if the goals, objectives, standards and guidelines, and practices of the Forest Plan are implemented in accordance with the Forest Plan.

- **Effectiveness Monitoring**: Used to determine if the Forest Plan standards and guidelines and practices, as designed and implemented, are effective in accomplishing the desired result.

- **Validation Monitoring**: Used to determine whether the data, assumptions, and estimated effects used in developing the Forest Plan are correct.

Effectiveness and validation monitoring are not typically done as part of project implementation. However, implementation monitoring and any project-specific monitoring are important aspects of the project.

Routine implementation monitoring assesses whether the project was implemented as designed, and whether or not it complies with the Forest Plan. Road inspectors will conduct monitoring during and after construction to ensure that Forest Service standards and guidelines and any project-specific mitigation measures are implemented. Resource specialists may also be involved in implementation monitoring to provide technical advice when needed.

Tongass National Forest staff annually conduct a review of BMP implementation and effectiveness. The results of this monitoring are summarized in the Tongass National Forest Annual Monitoring and Evaluation Report. This report provides information about how well the management direction of the Forest is being carried out, and measures the accomplishment of anticipated outputs, activities, and effects.

Chapter 3
Environment and Effects

INTRODUCTION

Chapter 3 provides information about the existing environment of the NPOW/El Capitan project roads and the potential consequences of the proposed action on the environment. The analysis focuses on the key resources and issues identified during the scoping process.

OVERVIEW

Chapter 3 is organized to focus on how each of the alternatives would affect key issues. Several of the issues are closely related. For this reason, information about effects may be presented in more than one section. For a complete analysis, it is important to read all the sections, including Other Environmental Considerations, which addresses resources that must be evaluated to meet regulatory requirements but were not identified as a high priority for assessment during the scoping process.

ANALYZING EFFECTS

Environmental consequences are the effects of implementing an alternative on the physical, biological, and social environment. CEQ regulations implementing NEPA specify several categories of environmental consequences. These include direct, indirect, cumulative, and unavoidable adverse effects and irreversible and irretrievable commitments. These categories are discussed below. Also included in this section is the available information upon which much of the analysis is based.

Direct, Indirect, and Cumulative Effects

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or that are spatially removed from the activity. Cumulative effects are defined as those resulting from incremental effects of the proposed action, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes those actions.

Unavoidable Adverse Effects

Some actions may cause adverse environmental effects that cannot be avoided or effectively mitigated.

Irreversible and Irretrievable Commitments

Irreversible commitments are decisions affecting non-renewable resources such as soils, wetlands, and unroaded areas. For example, construction of a road through a roadless area would cause environmental changes that would only be reversed over a long period of time, if at all.

Irretrievable commitments are defined as opportunities that are foregone for a period of time as a result of implementing the proposed action. An example of an irretrievable commitment would

be paving of a road segment from "point A" to "point B" along a particular route at one point in time, if a different route between the same points were to be upgraded at a later date.

AVAILABLE INFORMATION

Much of the environmental data for the Tongass National Forest resides in an electronic database formatted for a geographic information system (GIS). The Forest Service uses GIS software to assist in the analysis of these data and to present the results of analysis in numerical or map format. Analyses and maps presented in this EA are based primarily on the Forest GIS data. In addition to the GIS database, the analyses presented in this EA incorporate baseline data collected for other projects in the same vicinity. Such projects include the Luck Lake Timber Sale EIS, Coffman Cove Road EA, Control Lake EIS, Lab Bay EIS, and an ongoing joint Forest Service/Alaska Department of Fish and Game (ADF&G) road condition survey designed to document conditions of forest roads and highways throughout the Tongass National Forest. Inventories include observations of roads, culverts, bridges, drainage ponds, and ditch lines. In some instances, fish presence is documented within stream segments adjacent to the roads.

ENVIRONMENT AND EFFECTS ON THE SIGNIFICANT ISSUES

Issue 1: Whale Pass Access

Existing Conditions

Roaded access to Whale Pass from other communities on Prince of Wales Island is initially on NFSR 20 to NFSR 25 and 30 or to NFSR 27 (Figure 2-1). The community of Whale Pass is located on non-federal roads 1 to 2 miles south of the intersection of NFSR 27 and 30 along National Forest Road 3065. The community has 40 homes and 62 people according to the 2001 Alaska Community Database. In addition to the residential homes at Whale Pass, there is a private cabin for rent and a small grocery/general service store. Whale Pass is situated along a saltwater inlet known as Whale Passage, a migration route used by orca and gray whales. The community is unincorporated. Tourists visit the area to fish, camp along the beach, and watch for whales.

The roads to Whale Pass provide year-round access to the community; however, a four-wheel-drive vehicle may be needed during winter snow conditions. The existing roads are one-lane, gravel surface, with poor horizontal and vertical geometry. There are infrequent pullouts for passing. The roads are maintained periodically by the Forest Service through grading.

Effects of the Alternatives

Alternative 1 (no-action) would not alter existing conditions. Additional traffic is expected in the Whale Pass area when the IFA service begins at Coffman Cove. Traffic is expected to be primarily tourist-related. Road conditions are expected to worsen with this additional traffic, and additional road maintenance may be needed. There is likely to be an increased possibility of traffic accidents as vehicles pass on the existing one-lane roads.

Alternative 2 would provide a paved road on the 24.5 miles of NFSR 20, but would not include additional road improvements to NFSR 25, 30, or 27. Because no direct route to Whale Pass is

paved, IFA traffic may avoid Whale Pass, resulting in no direct socioeconomic benefit from future tourist visits to the island.

Alternative 3 would provide 6.4 miles of a two-lane paved roadway on NFSR 25 and 30. This two-lane road would decrease travel time to Whale Pass, help in preventing traffic accidents, and provide tourists a more enhanced opportunity to enjoy the scenic views of Whale Passage and Neck Lake. Over the long-term, less road maintenance would be needed on the paved roadway. The paved road would be an advantage to the residents of Whale Pass due to the decreased travel time needed to frequent other areas on Prince of Wales Island, notably Craig and Klawock, where there are more retail goods, services, and employment opportunities. Some logging is expected south of Neck Lake. Thus, there would only be occasional use of the improved roadway for truck hauling. Two smaller logging roads are connected to NFSR 25. This roadway would also help to provide increased socioeconomic benefits to Whale Pass residents because IFA tourists would likely use services and purchase retail goods from the Whale Pass community.

Alternative 4 would provide 6.1 miles of a gravel two-lane roadway on NFSR 27. The two-lane road may decrease travel time to Whale Pass as presently occurs on NFSR 27, but not as significantly as Alternative 3 because the road would retain a gravel base subject to rutting and potholes. Traffic safety would improve over existing conditions. Residents are unlikely to increase use of NFSR 27 when they commute to Craig, Klawock, or other areas south of the community because the Alternative 3 route is more direct to the southern portions of the island. However, tourists may be attracted to NFSR 27 with the increased recreational opportunities associated with Neck Lake and Cavern Lake. NFSR 27 has several logging roads both north and south of the roadway. In addition, timber production areas north of Whale Pass and between Salmon Bay Lake and Exchange Cove may use NFSR 27 to haul logs. The roadway has more likelihood for use by logging trucks than Alternative 3 over the long term. A two-lane roadway would provide safer road conditions for tourists passing log trucks. Socioeconomic benefits may also occur to the community as tourists purchase services and retail goods from Whale Pass residents.

Cumulative Effects

Improved roadways to Whale Pass would result in more travelers visiting the area. The community could benefit from these visits due to the travelers' needs for lodging, food, gas, and other goods. Recreational facilities along the improved roads would have increased use by visitors. More litter is likely along roadways, and improved maintenance will be needed on unpaved gravel roads. Land values could increase over time if the community is able to permanently attract visitors. This is likely only if more services are provided in the future.

Mitigation

Site-specific mitigation for specific areas of the roadway that affect resource values are described under the specific resource.

Issue 2: Quality of Driving Experience

Existing Conditions

NFSR 20, 15, 25, 27, and 30 were originally designed and constructed for use as timber hauling and forest administration roads. Entire roadways were not developed over a single time period.

Instead, only the road portions needed for immediate access and use were constructed by logging contractors. Over time, these separate road systems were connected at their closest point, where needed. This resulted in a less efficient road system with more turns and curves than would otherwise have been designed if the overall road corridor were constructed as a single project.

The existing project road widths range from 14 to 22 ft. The roads cross rolling terrain with side-hill cuts into glacial deposits overlying bedrock or, in low-lying areas, with side-hill cuts into rock fills that were laid in areas of soft organic deposits (peat and muck). At specific areas along the roads, vegetation is within 10 ft, and many areas are rutted with potholes. Other sections have steep side slopes without guardrails. There are no regulatory or warning signs on the roads. The horizontal alignment contains sharp curves in some areas that are inadequate for a 35-mph speed limit. At numerous locations, the narrow width of the roadway does not allow for safe passage of more than one vehicle.

Road maintenance occurs on a routine basis along NFSR 20, the primary transportation corridor for North Prince of Wales, and is variable and dependent on funding and road conditions for NFSR 15, 25, 30, and 27. Gravel roads are difficult to snow plow, and continued maintenance results in gravel being pushed out further on the road system, resulting in wider than originally intended roads.

The quality of the driving experience on existing roads is poor due to the numerous ruts and potholes on the road system and the poor horizontal alignment. The single-lane roads also require drivers to be aware at all times of pullout locations to use for oncoming cars. The one-lane roads have low design speeds that average about 15 to 20 mph dependent on site conditions. These project roads do not meet convenience and safety objectives of drivers.

Effects of the Alternatives

When the IFA begins service in Coffman Cove, increased visitor use on the project roads is expected, although overall use over time is expected to be 200 vehicles per day. Construction of the project roads would follow AASHTO design standards based on projected daily usage. These design standards include the following:

- Two 11-ft lanes with 1-ft shoulders (24 ft for paved roads) and a roadside clear zone. Two-lane gravel roads are 28 ft in width. The clear zone is the area beyond the edge of the lane where out-of-control vehicles can recover and return to the road or travel to the bottom of the road embankment.

- Guardrail installation where needed, which would improve driver safety and help facilitate snow removal. Guardrails are used in areas where it is not possible to provide the recommended side-slopes before a steep drop-off is encountered. Guardrails are also used were there are fixed obstacles within the clear zone.

- Road realignment to allow a 35-mph speed limit.

- Paved centerlines and fog lines on all improved roads.

- Roadside pullouts for recreational access and scenery viewing.

- Regulatory and informational signs for warnings, service and tourist-related information, and recreational access points.
- For road segments that have sharp curves and/or pass through wetlands or other sensitive resources, reconstruction would require minor alterations to roadway alignment, to ease sharp curves and steep grades and to avoid road construction through deep peat deposits.
- Existing bridges would be left in place.
- Roadway culverts would be removed and replaced with new culverts designed to maintain hydrology in wetlands and improve drainage. Replacement culverts at fish-bearing streams would be designed to provide fish passage.

The road improvements described above would occur for specified roads within each alternative. No road improvements would occur under Alternative 1 (no-action), although routine maintenance would continue. The quality of the ride is expected to continue to degrade under Alternative 1 as potholes accumulate and more gravel is lost from the routine grading. Travelers may be discouraged from traveling in the North Prince of Wales area, potentially resulting in less use of the IFA system than if the roads were improved.

Implementation of Alternative 2 would result in 36.8 miles of paved road on NFSR 20 and 15. These roads would be used by residents as they commute within the island system and visitors traveling to Whale Pass, Naukati, and recreation sites on the north end of the island, including El Capitan Cave. Although NFSR 25, 30, and 27 would not receive road improvements under Alternative 2, more travelers are expected to visit Whale Pass because of the improved road conditions on NFSR 20.

The road improvements on NFSR 20 and 15 for Alternative 2 would improve the quality of the ride in the following manner:

- The paved road would eliminate rutting and potholes, resulting in a smooth even ride.
- The two-lane road would eliminate the need to pull over to the roadside for oncoming cars as presently occurs on the one-lane road.
- The new road alignment from road straightening would increase stopping sight distances, allowing drivers to see further down the road.
- The new guardrails would help to warn drivers of steep embankments and help protect cars in accidents.
- The paved roads and guardrails would allow for snow plowing.
- The increased vegetation clearing on either side of the road would allow for an increased stopping sight distance.
- The new regulatory and warning signs on the roadway would direct drivers to road conditions, community locations, and picnic and day use areas.
- Travel speeds would increase to 35 mph with the road improvements as described above.

Alternative 3 would result in 30.9 miles of paved road on NFSR 20, 25, and 30. The quality of the ride improvements would be similar as described under Alternative 2; however, less road would be improved. The 12.3 miles of improved road along NFSR 20 and 15 in Segment 3 and Segment 4 of Alternative 2 could be used by more tourists than the 6.4 miles of improved road on NFSR 25 and 30 in Segment 1 of Alternative 3. Recreational opportunities of interest in the vicinity of Alternative 3 include the Neck Lake Terminal Coho fishery at the outfall of Neck Lake on Segment 1.

NFSR 20 provides the primary roadway to the north end of the island. Fewer drivers are expected to use NFSR 25 and 30, except those visitors interested in visiting the recreation sites at Neck Lake or the community of Whale Pass. However, the improved roads on NFSR 25 and 30 would allow an easier, safer, and quicker commute to the south end of the island for Whale Pass residents.

Alternative 4 would include an improved road system for 39.6 miles of road, where 24.5 miles of NFSR 20 would be paved and 9.0 miles would be gravel, and 6.1 miles of NFSR 27 would be gravel. On the paved roads, the quality of the driving experience would be similar to that described for Alternatives 2 and 3. The gravel portion of NFSR 20 and 27 would, over time, result in a decreased level of quality driving experience as the gravel is absorbed into the road system and ploughed to the roadside, and the road develops ruts and potholes. Safety would decrease as drivers swerve to avoid potholes. On gravel two-lane roads, drivers often ignore centerlines and, alternatively, drive on the roaded area with the fewest ruts and potholes, posing a safety risk for oncoming cars. However, the two-lane roads on NFSR 20 and 27 would be of advantage to visitors when logging trucks are in operation. Tourist safety would be increased, particularly because there are several recreation sites in the area that would attract tourists, including El Capitan Cave, Beaver Falls Karst Interpretive Trail, Neck Lake Terminal Coho fishery, Twin Island Lake, Cavern Lake, and trails and roads to Sinkhole Lake. The gravel road on NFSR 27 would primarily aid in visitor safety to recreation sites and the community of Whale Pass, and would not be advantageous to the residents of Whale Pass when they commute to the south end of the island.

Cumulative Effects

The increased quality of the driving experience at the north end of Prince of Wales Island would likely attract more visitor use and allow for residents to visit the south end of the island in a shorter time period. Over the long-term, more residents in the north end of the island may commute to Craig and Klawock for employment due to the increased speed limits and decreased travel time.

Mitigation

Mitigation for specific areas of the roadway that affect resource values are described under the specific resource.

Issue 3: Karst and Cave Protection

Existing Conditions

Development of Karst Resources in the Project Area

The geology and marine climate of Southeast Alaska are particularly favorable for karst development. Extensive areas of carbonate rocks (approximately 515,000 acres) are found within the Tongass National Forest. Because of the highly fractured nature of carbonates, high annual precipitation, and the wetlands and muskegs near much of the carbonate bedrock, karst has developed to one extent or another within all carbonate blocks. The Tongass National Forest contains the largest concentration of dissolution caves known in Alaska. Members of the Glacier Grotto (Alaska Chapter of the National Speleological Society) and Tongass Cave Project, in conjunction with the Forest Service, have discovered and surveyed over 500 caves in Southeast Alaska.

The carbonate rock found in karst resources dissolves in naturally occurring acidic waters. Lateral underground movement of acidic waters can develop extensive cave systems that provide a protected environment for flora and fauna. Field studies have been performed by the Forest Service (Baichtal 1991) that show the extensive complement of living species that can be found in cave systems of the region.

Twenty-eight known karst resources are located within a 300-ft buffer of the project roads (Table 3-1). This information was obtained from a GIS map developed in 1993. Since then, karst resources have been identified in the vicinity of Segment 1, although the 1993 GIS data does not identify karst resources in this area. In addition, significant large areas of karst occur along the majority of Segment 4. The areas are on both the east and west sides of the segment and also cross over the segment. These areas are karst landscapes where internal drainages are developed and include large collapse basins, doline fields, and carbonate outcrops. The GIS data also includes resurgence streams. Resurgence is the point where an underground stream emerges at the surface and becomes a surface stream. Resurgence areas are considered indicators of underground karst systems. In the project area, the majority of the karst resources are concentrated in the vicinity of Segment 4. The known karst resources in Segment 3 include four sinkholes at the junction of three segments (Segments 2, 3, and 4). Segment 2 along NFSR 27 contains 12 karst resources and passes directly above Cavern Lake Cave. Along with the larger karst areas described above, Segment 4 contains 18 known karst points, including seven caves. Additional laser-based aerial mapping and field reconnaissance will be conducted during summer and early fall 2001 to update the GIS data and obtain a more conclusive inventory of karst resources in the vicinity of project roads.

Karst Resources as Recreation Sites

El Capitan Cave (T. 66 S., R. 79 E., Sections 2 and 3)

The El Capitan Cave is one of the major recreational attractions on the north end of the island and is a popular tourist destination for nonresidents. Cave tours are provided by Forest Service guides from mid-May through September. The recreational area is near the terminus of Segment 3 (NFSR 15) in Alternative 2, but is located beyond 300 ft of the roadside. The cave has more than 2 miles of horizontal passage, and bear and caribou bones found within the cave date to over

12,000 years ago. The area near the cave site has been proposed for additional recreational improvements, including a campground, interpretive signs, improved trail, restrooms, and day-use area.

Table 3-1. Known Karst Locations Within 300 Ft of Project Roads

Type[1]	Common Route	Segment 1	Segment 2	Segment 3	Segment 4
Cave	0	0	1	0	7
Sinkhole	0	0	7[2]	4[2]	4[2]
Resurgence	2	0	0	0	1
Resurgence Class 1 stream	0	0	2	0	1
Resurgence Class 2 stream	0	0	1	0	0
Resurgence Class 3 stream	0	0	1	0	4
Insurgence Class 3 stream	0	0	0	0	1
Total	**2**	**0**	**12**	**4**	**18**

[1] Not shown on this table are larger karst polygons that cover more expansive areas with substantial karst features. These karst landscapes are primarily in the vicinity of Segment 4.

[2] Four sinkholes are within the junction of NFSR 20 and NFSR 27 and are included in each of the segments at this junction.

Beaver Falls Karst Interpretive Trail (T. 66 S., R. 79 E., Section 9)

The Beaver Falls Karst Interpretive Trail, located along Segment 4 (NFSR 20) in Alternatives 2 and 4, has recently been constructed. This project is within 0.5 mile of NFSR 20, approximately 1 mile south of Twin Island Lake. The 0.75-mile-long trail is intended to be a surface trail displaying the significant karst features in the Beaver Falls area. In 2002, the trail will use interpretive signage to focus attention on the karst features and the relationship between the soils, water, and cave development. The trail is not intended to access underground features, but to investigate surface features using a barrier-free trail design.

Cavern Lake Interpretive Trail (T. 66 S., R. 79 E., Section 10)

The Cavern Lake Trail is 0.1 mile long and located on NFSR 27 (Segment 2). The trail provides access to an observation deck at the entrance to Cavern Lake Cave. The cave was formed by the underground flow of Cavern Lake through a low wall of Heceta limestone.

Sinkhole Lake Interpretive Trail and Day Use Area (T. 66 S., R. 79 E., Sections 3 and 10)

Located adjacent to Forest Road 2730, approximately 0.5 mile north of Cavern Lake Cave Trailhead, is the proposed Sinkhole Lake Interpretive Trail and Day-Use Area. Opportunities exist to construct approximately 0.4 mile of barrier-free trail. The trail would first view the entrance to Starlight Cave, a 110-ft-deep, 100-ft-diameter entrance to an extensive cave system. The trail would continue through a forested wetland/muskeg to the shore of Sinkhole Lake and several day-use picnic sites. The trail would then follow the outlet stream into a 5-ft-wide, 70-ft-

deep canyon, which ends in a 180-ft-deep cave entrance called Thunder Falls. Here the outlet stream of Sinkhole Lake plummets from the marble canyon down a waterfall into the cave passage below, which is an impressive sight. The area would require as a minimum 0.4 mile of trail construction, two viewing platforms over karst features, one to two bridges, two to three day-use sites, one restroom facility, and a parking area.

River's End Cave and Karst Area Interpretive Trail (T. 66 S., R. 79 E., Section 30)

Located near NFSR 20741 (a logging road off NFSR 20) and in the saddle above the west end of Neck Lake is the River's End Cave and Karst Area Interpretive Trail. Opportunities for trail development are similar to those in the Beaver Falls area. Many spectacular cave entrances and sinking streams exist in the area. The trail would access Yukon's Pit, a 150-ft-deep, 60-ft-diameter opening in the forest floor, OS Pit, Panic Pit, River's End Cave (where a large stream disappears underground at a cliff face), several huge sinkholes, stream insurgences, and other cave entrances. The area would require construction of at least 0.75 mile of trail and placement of interpretative signs along the trail. A viewing platform is required over Yukon's Shaft, River's End, and Arm Pit Cave. Additional trails to adjacent features are possible. A parking area adjacent to NFSR 20741 is needed, and restroom facilities are suggested.

Effects of the Alternatives

Alternative 1 (no-action) would not result in effects to karst and cave resources within the vicinity of the project area. The Tongass National Forest has Forest-wide standards and guidelines for management of karst and cave resources contained in the Forest Plan (pp. 4-18 to 4-20 and Appendix I, USFS 1997c). These standards and guidelines would help to ensure that the cave resources remain intact and are protected from physical disturbances.

Over time, it is expected that funding to develop the Sinkhole Lake trail and campground and Starlight Cave viewing deck would be obtained. With the six karst recreation opportunities at the north end of the project area (El Capitan, Beaver Falls, Cavern Lake, Sinkhole Lake, Starlight Cave, and River's End Cave), more visitors are expected to be attracted to the area to view these unique karst resources. This would result in an increased use of project roads and an increased need for lodging, restaurants, and services in the north end of the island. The gravel road conditions are likely to need more routine maintenance than occurs presently; otherwise, more road rutting and potholes may occur.

The three action alternatives could affect the karst resources through direct physical disturbance or by changes in surface water hydrology that may alter the existing karst drainage systems. Physical impacts may occur during construction when the existing road surface is dismantled and a new deeper road surface is constructed. Blasting or significant ground disturbances from heavy equipment could affect the caves in the buffer area. In addition, surface water drainage may be altered, creating disruptions and changes in the existing underground karst ecosystem. Widening and paving the road surface would also increase the amount of impervious area, which could change the hydrology, infiltration rates, sediment production, and pollutants in the immediate vicinity of the roadway.

All action alternatives include the Common Route, which has roaded areas that cross two resurgences and other karst resources. In addition, each alternative would affect different karst resources as described below.

Alternative 2 includes Segments 3 and 4, where karst resources are known to occur. Twenty known karst resources (including caves, sinkholes, resurgence and insurgence points) occur within 300 ft of the proposed road improvements as identified from the 1993 GIS data (Table 3-2). In addition, larger karst landscapes cross Segment 4 that are not shown on this table. More karst areas would likely be identified from laser-based aerial mapping and field reconnaissance. The road improvements planned in the area have the potential to disturb cave resources and disrupt surface water flow in the karst areas. In comparison, Alternative 3, which includes Segment 1, is not likely to result in as much physical disturbance to the karst resources because the alternative occurs south of the area where most karst resources occur. Alternative 4 includes Segments 4 and 2, and has a similar potential to disturb karst resources as Alternative 2. Twenty-eight known karst resources in Alternative 4 occur within 300 ft of the proposed road improvements. Alternative 4 also passes within 30 ft of Cavern Lake Cave. Blasting in the past has damaged caves, and any blasting in this area near Cavern Lake Cave could result in damage to the cave resources in this roaded area. However, the road construction may provide opportunities to close and rehabilitate the quarry located on top of the cave. Although it will not be possible to avoid all karst areas, proper mitigation can protect these resources.

Table 3-2. Known Karst Locations Within 300 Ft of Each Alternative

Type[1]	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cave	0	7	0	8
Sinkhole	0	4	0	7
Resurgence	0	1	2	3
Resurgence Class I stream	0	3	0	3
Resurgence Class II stream	0	0	0	1
Resurgence Class III stream	0	4	0	5
Insurgence Class III stream	0	1	0	1
Total	**0**	**20**	**2**	**28**

[1] Does not include the larger karst landscapes that cross over Segment 4.

The caves selected for recreational development in the vicinity of the project roads are being reviewed by karst specialists to develop a recreational site plan that would allow for educational, scientific, and recreational enjoyment. The additional visitor use of the six karst recreation sites is not expected to result in karst damage, but will be continuously evaluated over time to ensure resource protection. Additional protection measures may be necessary of visitor usage increases significantly or resource damage is observed. Cave resources are protected by the Federal Cave Resource Protection Act (FCRPA) of 1988. FCRPA provides protection for caves located on federal lands that have been evaluated and determined to have important geologic (or other) value for educational, scientific, or recreational purposes.

Cumulative Effects

Significant karst resources occur in the project vicinity, specifically the El Capitan Cave, Beaver Falls Cave area, Cavern Lake, Sinkhole Lake, Starlight Cave, and River's End Cave. The improved roadway would provide increased recreational and educational possibilities for visitors

to observe and value the karst resources. The improved access could lead to future karst discoveries, and may result in an increased visitor attraction, particularly among cavers.

Mitigation

Prior to road construction, the project roads would be field surveyed for high-vulnerability karst resources. Documentation would include the degree of epikarst development and the presence of caves, insurgences and resurgences, sinkholes, collapsed channels, and other karst features. As described in the Forest Plan, the area would be mapped as low, moderate, and high karst vulnerability. The effort would include dye tracing to evaluate effects of road construction on recharge areas, geotechnical investigations to determine road stability in karst areas, realigning the road to avoid significant karst features (caves, vertical shafts, sinkholes, or insurgences), and ensuring that water is not diverted to or from karst features. Protection measures may include avoiding construction over karst features, prohibiting water diversion to or from karst resources, culvert placement and density, reducing erosion and sediment transport from the road surface and cutslopes, revegetating cut-and-fill slopes, erosion prevention, and restrictions on blasting locations. Rock quarries would not be developed in the vicinity of karst resources without adequate site survey and design. Quarries would also be properly closed after abandonment. Guidelines in Appendix I of the Forest Plan (pages I-1 to I-22) will be followed to ensure karst resource protection.

With the expected increased visitor use of the karst recreation sites in the vicinity of the project area, there is the potential for litter and resource damage. If karst resource damage occurs, increased maintenance of the karst recreation sites may be necessary.

Issue 4: Wetland Protection

Existing Conditions

Wetland Presence

Wetlands are defined as areas where hydric soils, hydrophytic vegetation, and wetland hydrology occur. Hydric soils are formed under saturated water conditions, whereas hydrophytic vegetation is defined as a dominance of plants that are adapted to wet soil conditions, and wetland hydrology is defined as soils that are saturated within 12 in. of the ground surface for at least 14 consecutive days during the growing season. Wetlands within the vicinity of project roads will be identified and mapped through field surveys, but have been initially mapped for this EA using the Tongass National Forest GIS wetland classification system that uses the three wetland parameters described above and the National Wetlands Inventory (NWI) classification approach (Cowardin et al. 1979) and shown below in Table 3-3. From this preliminary analysis, forested wetlands and mixed forested wetlands comprise the majority of the wetland types present.

Note that the wetlands identified for this EA should be considered preliminary. To develop definitive wetland boundaries, a jurisdictional wetland delineation, following the 1987 U.S. Army Corps of Engineers protocol (Environmental Laboratory 1987), will be conducted during summer 2001. This protocol will include field surveys of soils, vegetation, and hydrology to identify wetlands by qualified wetland biologists.

Table 3-3. GIS Mapped Wetland Acreage Within 100 Ft of Project

Wetland Type	Common Route	Segment 1	Segment 2	Segment 3	Segment 4
Forested wetlands	65.8	36.8	2.2	8.8	10.5
Mixed forested wetlands					
w/ emergent sedge wet complex	60.8	18.5	18.8	17.8	13.3
w/ moss muskeg complex (<50% forested)	2.8	-	-	-	-
w/ non-wetland complex (>50% non-wetland)	35.4	0.4	9.6	1.5	14.9
w/ non-wetland complex (>50% wetland)	2.8	-	-	-	-
Moss muskeg (spagnum peat muskeg)	0.4	-	-	-	-
Emergent tall sedge muskeg	6.2	-	5.2	-	0.2
Emergent short sedge wetland	-	0.2	1.0	-	4.1
Total	**174.2**	**55.9**	**36.8**	**28.1**	**43.0**

Wetland Function

Wetlands play important roles that provide valuable benefits to the environment and society. These functions include: (1) flood and stormwater control, (2) baseflow and groundwater support, (3) erosion and shoreline protection, (4) water quality improvement, (5) natural biological support, (6) overall habitat functions, (7) specific habitat functions, and (8) cultural and socioeconomic characteristics. The degree to which wetlands perform these functions depends on the type of wetland and its setting (level of disturbance occurring within a wetland).

Flood and stormwater control refers to a wetland's ability to reduce or modify potentially damaging effects of storm and flood flows. This function is evaluated based upon such parameters as the size and category of wetland, type of outlet, amount of forested cover, and position in the drainage.

Baseflow and groundwater support is defined as ". . . the role which a specific wetland area plays in maintaining the stability and environmental integrity of the entire system to which it is physically and functionally related" (Reppert et al. 1979). This function is evaluated according to parameters including size and location of the wetland; proximity to other palustrine, riverine, or lacustrine systems; hydroperiod; and presence of flow-sensitive fish.

Erosion and shoreline protection refers to a wetland's ability to mitigate the effects of waves and storm damage, and thus increase shoreline stability and limit erosion. This function is evaluated according to such features as type, structure, and density of vegetation; width of the vegetative area and buffering capacity; and amount of development in the subcatchment.

Water quality improvement refers to a wetland's ability to purify water through a variety of physical, biological, and chemical processes. This function is evaluated according to such

characteristics as size and type of wetland, nature and density of vegetation, hydroperiod, and proximity to pollution sources.

Natural biological support refers to a wetland's ability to provide habitats for a diversity of species. This function is evaluated according to such parameters as type, diversity, and amount of vegetation; proximity to other habitats; prevalence of invasive species; amount of organic matter accumulation and export; type, diversity, size, and amount of habitat features; width of buffer; and connectivity to other habitats.

Overall habitat function refers to the likelihood of the presence of uncommon plant communities or associations of rare animal species. This function is evaluated according to characteristics of size, habitat diversity, and the presence or absence of a wildlife refuge or sanctuary.

Specific habitat function evaluates a wetland's capacity to provide habitat for invertebrates, amphibians, fish, mammals, and birds. This function is evaluated through parameters that include presence of surface water, connectivity to other aquatic features, diversity of vegetative communities, and proximity to other habitats.

Cultural and socioeconomic characteristics, based upon the value of the wetland to humans, are evaluated by assessing parameters including opportunities for education or recreation, aesthetic value, presence of commercially valuable natural resources, historical or archaeological value, and proximity to open space.

For the project wetlands, the wetland functions described above are expected to occur within all of the wetland classifications identified, if undisturbed, excepting cultural and socioeconomic functions. These latter functions would most likely occur in those wetlands that are located in the vicinity of a recreational setting or adjacent to a cultural or historic resource site.

Applicable Standards, Guidelines, and Regulations

Forest Plan Standards and Guidelines

Forest Plan standards and guidelines (USFS 1997b) require that alteration and new construction in wetlands be avoided, wherever there is a practicable alternative. These alternatives should take into consideration costs, existing technology, and logistics in light of overall project purposes (40 CFR 230.3 [q]). Furthermore, the loss of higher value wetlands (especially fens) and the adverse impacts of land management activities on wetlands should be minimized. Wherever wetlands may be unavoidably impacted, the project should maintain the natural and beneficial functions and values of wetlands to the extent practicable.

Federal Regulations

There are two primary federal regulations that could apply to the wetland resources associated with the proposed project: the Clean Water Act (CWA) and the Rivers and Harbors Act. The CWA, which is administered jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (USEPA), is intended to protect the biological, physical, and chemical integrity of the nation's waters, including wetlands. There are two sections of the CWA that could pertain to the proposed project: Sections 404 and 401. Section 404 regulates

placement of dredge or fill material into waters of the U.S., including wetlands. Activities that constitute placement of fill include trenching, ditching, draining, and installing piers or pilings. Project proponents intending to undertake such activities must obtain a permit from the Corps prior to initiating site work. The purpose of the Section 401 water quality certification is to ensure that federally permitted projects are consistent with state water quality standards. Projects that require a 404 permit generally must have a state water quality certification.

The Rivers and Harbors Act (Section 10) applies to activities in, over, and affecting navigable waters of the U.S. The purpose of this law is to preserve the navigability of the nation's waters. The law is implemented through a permit process administered by the Corps. For purposes of Section 10, the Corps defines navigability as presently, historically, or potentially navigable, including intertidal areas. Section 10 reviews evaluate the effects of a project on navigability and are typically conducted in conjunction with the CWA Section 404 permit process. Other factors taken into consideration in the Section 10 permit process include flood control, fish and wildlife habitat management, and other environmental impacts.

In addition to the two primary federal regulations, Executive Order 11990, as amended (42 USC 4321 et seq.), applies to wetland resources in the project roadway vicinity. This executive order requires federal agencies having statutory authority and leadership over federal lands to avoid, to the extent possible, the short- and long-term adverse impacts associated with loss or modification of wetlands.

Effects of the Alternatives

The large percentage of the project roadway vicinity that is identified by GIS mapping as wetland (57 percent of the total road miles) makes this resource impossible to completely avoid. However, wherever practicable, road widening boundaries and road straightening locations would be adjusted to reduce the long- and short-term impacts associated with loss or modification of high-quality wetlands.

Direct impacts to wetlands under the proposed action can be classified into two types:

(1) Permanent impacts from filling wetlands currently within cleared areas adjacent to the roadway and conversion to non-wetland gravel or asphalt roadway.

(2) Conversion from one wetland type to another: forested wetlands currently adjacent to the roadway but beyond the cleared area to emergent wetlands within cleared areas. This conversion would include a change in forested wetland vegetation to low shrubs and forbs, and consequently, the functionality of the wetlands would be altered.

Under Alternative 1 (no-action), wetlands would not be altered within the project area. No changes in wetland area or functions would occur.

Alternative 2 would result in the filling of approximately 15 wetland acres for the paved roads and an additional impact area of 122 acres where wetlands would be affected from roadside clearing, ditches, movement and storage of heavy equipment during construction, roadside turnouts, new side slopes, and revegetation of native grasses. Total impact area is 136.7 acres (Table 3-4). Wetland hydrology is expected to change due to the increased impervious surfaces of the paved roads. Stormwater runoff and pollutant loadings will more likely drain to adjacent

wetlands because the gravel surfaces would no longer be present to directly absorb rainfall. However, air- and water-borne sediments entering wetlands would be reduced.

Table 3-4. Wetland Acreage Impacts by Alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wetlands to be filled for paved and gravel roads[1]	0	14.7	13.8	17.6
Roadside clear zone wetlands impacted during construction, including ditches, side-slopes, or roadside turn-outs[2]	0	122.0	116.2	123.2
Total Wetland Impact Area	**0**	**136.7**	**130.0**	**140.8**

[1] Determined based on a 6-ft road width increase from 18 to 24 ft for paved roads and from 18 to 28 ft for gravel roads.

[2] Determined using an increase in cleared area of 52 ft.

Alternative 3 would result in approximately 7 acres less wetland impacts than Alternative 2. Wetland function and stormwater runoff impacts would be similar to Alternative 2. Alternative 4 fill impacts are greater than either Alternative 2 or 3 at 140.8 acres.

Cumulative Effects

Cumulative effects include the permanent loss of wetland habitat within the road corridor, particularly in the area of roadway widening and realignment. In addition, other road improvement projects on the Thorne Bay Ranger District would result in additional wetland loss and conversion in the ranger district. However, because a large percentage of the island is forested wetland, no significant loss of wetlands is expected from these projects.

Mitigation

Executive Order 11990, as amended (42 USC 4321 et. seq.), requires federal agencies that exercise statutory authority and leadership over federal lands to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands. Where practicable, direct or indirect support of new construction in wetlands must be avoided. A CWA Section 404 and 401 permit would be obtained prior to project construction, and possibly a Section 10 permit based on results of field surveys. These permits would be obtained from the Corps of Engineers and would include the development of a wetland mitigation plan with the approach described below.

Wetland avoidance is the first priority. Where project impacts on wetlands cannot be avoided, appropriate steps would be taken to minimize the adverse impacts by constructing roads using the minimum width and length allowable. In addition, all applicable BMPs [33 CFR 323.4 (a)(6)(I-XV)] would be implemented. Once avoidance and minimization have been implemented to the maximum extent possible, compensatory mitigation may be necessary. Compensatory actions include restoration of existing degraded wetlands/aquatic sites or creation of human-made wetlands. Compensatory mitigation would occur in areas adjacent or contiguous to the discharge site (on-site mitigation). If on-site mitigation locations are not present, off-site mitigation would be undertaken in the same geographic area.

Wetland functions and biological significance would be considered when assessing mitigation for the impacted wetlands in the project area. To determine the nature and extent of wetland

creation, careful consideration would be given to the likelihood of success and the risk of failure. Wetland restoration would be considered where degraded wetlands occur in the project vicinity. These areas would be identified during wetland field surveys.

Issue 5: Sedimentation and Turbidity

Existing Conditions

Turbidity and sedimentation occur when fine-grained upland soils erode into water bodies. These eroded soils may cause turbidity (suspended sediments in the water that obscure water clarity) or cover the existing gravel, bedrock, and vegetation of streams and lakes (sedimentation). Sedimentation can result in the loss or degradation of fish and aquatic habitat. The slow erosion of the existing gravel roads can increase the sedimentation in roadside ditches, wetlands, streams, lakes, and karst groundwater systems. Roadway runoff increases the erosion and landslide potential during periods of precipitation or snowmelt, affecting fish habitat at the point of entry and downstream.

The amount of vehicle traffic on gravel roads also increases the amount of erosion and sediment potential to streams. More traffic, increased usage by trucks, and high levels of precipitation cause increasing amounts of sedimentation and turbidity in the area streams. These fine sediments obscure fish habitat and feeding opportunities, resulting in indirect effects to fish, though turbidity is typically a short-term impact occurring during periods of high precipitation.

The potential for more substantial sediment impacts also occurs where roads are adjacent to lakes and saltwater bodies (Table 3-5). For the project roads, areas where sedimentation likely affects larger water bodies include the Sarkar and Tunga lakes area adjacent to the Common Route, Neck Lake and Whale Passage along Segment 1, Twin Island Lake and Cavern Lake along Segment 2, and El Capitan Passage along Segment 3. No large lakes are adjacent to Segment 4. As shown in Table 3-5, all roadway segments are near lakes and saltwater areas. Segment 1 contains 26,034 ft of roaded area that is either adjacent to (within 300 ft) or crossing freshwater lakes or saltwater areas. In comparison, the majority of Segment 4 is outside of major lakes and saltwater areas.

Table 3-5. Distance (in Ft) of Freshwater Lakes and Saltwater Areas Crossed by or Within 300 Ft of Project Roads

	Common Route	Segment 1	Segment 2	Segment 3	Segment 4
Freshwater lakes within 300 ft	11,018	11,729	4,732	-	603
Freshwater lakes crossed by roads	27	1,367	231	-	148
Saltwater areas within 300 ft	633	12,809	-	8,201	-
Saltwater areas crossed by roads	150	129	-	-	-
Total	**11,828**	**26,034**	**4,963**	**8,201**	**751**

A road condition survey, conducted in 1999, identified 109 locations in the project area that had water quality concerns (Figure 3-1). These concerns were related to the condition of roadside ditches (erosion, plugging, or blockages), cross drain culvert and catchbasin conditions, erosion of cut-and-fill slopes and road surfaces, and culvert conditions. Most of these areas are along Segments 1 and 2. Although many of these locations are not directly associated with stream crossings, the proper functioning of these factors is important for controlling the movement of sediments to maintain high quality fish habitat in the area streams.

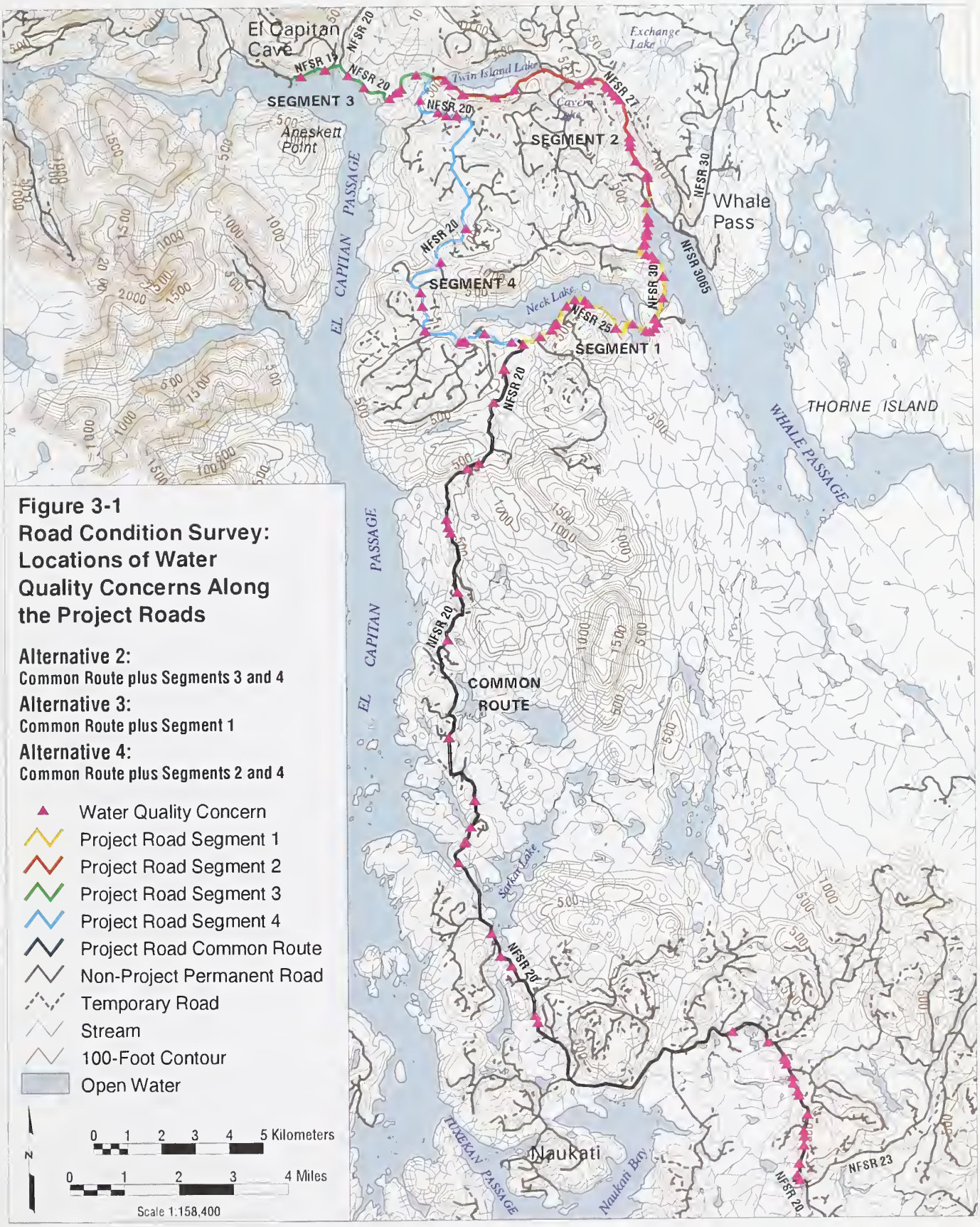


Figure 3-1
Road Condition Survey: Locations of Water Quality Concerns Along the Project Roads

Alternative 2:
Common Route plus Segments 3 and 4

Alternative 3:
Common Route plus Segment 1

Alternative 4:
Common Route plus Segments 2 and 4

- Water Quality Concern
- Project Road Segment 1
- Project Road Segment 2
- Project Road Segment 3
- Project Road Segment 4
- Project Road Common Route
- Non-Project Permanent Road
- Temporary Road
- Stream
- 100-Foot Contour
- Open Water

N

0 1 2 3 4 5 Kilometers

0 1 2 3 4 Miles

Scale 1:158,400

Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rcs_wq.gra created by rcs_maps.aml Date: July 06, 2001

Effects of the Alternatives

Paving the existing roadway would reduce the road surface erosion by about an order of magnitude, thereby reducing the sedimentation into the adjacent streams, as well as karst groundwater systems (WDNR 1994). Combined with the planned culvert replacements, the road project is expected to improve fish passage and fish habitat for those streams crossed by the road system. The benefit would be more prevalent for alternatives that cross a greater number of Class I and II streams (anadromous and resident fish streams, respectively) where sedimentation and turbidity directly impact fish habitat. In addition, the correction of drainage and erosion problems along the alignment, which contribute to existing water quality concerns, is expected to reduce the sediment loading to the area streams.

Despite the potential benefit of decreased turbidity and sedimentation by paving the existing roadway, these impervious surface areas would increase the volume and rate of stormwater runoff into the receiving waters in the area and adjacent karst groundwater systems. Widening the existing roadway would also increase the volume and rate of stormwater runoff. These increases could result in a greater potential for streambank erosion in areas downstream of the road crossing, thereby increasing the sedimentation and turbidity risks. However, it is assumed that incorporating appropriate stormwater detention/retention BMPs would mitigate these potential impacts.

Roadways adjacent to lakes and saltwater bodies are also susceptible to direct sedimentation and turbidity impacts. However, similar to the stream crossings, paving the existing gravel roadway and correcting drainage and erosion problems along the alignment would reduce sediment loading to these water bodies. In addition, the increased runoff from the paved surface area would be less likely to impact shoreline habitat, compared to the erosion potential of increased runoff to streams. The greater dilution potential in lakes and saltwater bodies would reduce the impacts from sediment or pollutant loading from the roadway.

Alternative 2 includes the crossing of 41 Class I and II streams, as well as being adjacent to Sarkar and Tunga lakes and the El Capitan Passage. This alternative would be either adjacent to or crossing 20,780 linear ft (3.9 miles) of freshwater lakes and saltwater areas (Table 3-6). The paved roads will help in protecting these resources, particularly because the Sarkar Lake area is considered eligible for Recreational River status. The 36.8 miles of paved roads would decrease the potential for sedimentation and turbidity, compared to existing conditions. It was assumed that detention/retention BMPs would be constructed to mitigate for impacts related to any increased volume and rate of stormwater runoff.

Table 3-6. Road Locations by Action Alternative Within 300 Ft of a Freshwater Lake or Saltwater Area

	Alternative 2	Alternative 3	Alternative 4
Feet (miles) of roads that are within 300 ft of freshwater lakes or saltwater areas but do not cross these water bodies	20,780 (3.9)	37,862 (7.2)	16,996 (3.2)
Feet of roads that cross freshwater lakes or saltwater areas	325	1,673	556
Total ft (miles)	21,105 (4.0)	39,535 (7.5)	17,552 (3.3)

Alternative 3 includes the crossing of 47 Class I and II streams and the roadway is also adjacent to Neck Lake and Whale Passage. This alternative would be either adjacent to or crossing 37,862 linear ft (7.2 miles) of freshwater lakes or saltwater areas (Table 3-6). Alternative 3 has about double the amount of roaded area adjacent to these water bodies compared to the other action alternatives, and triple the amount of roaded area that crosses lakes and saltwater bodies. Road paving will aid in protecting fish habitat from sedimentation and turbidity in the vicinity of these roads, and detention/retention BMPs would mitigate for stormwater runoff impacts.

Alternative 4 also includes the crossing of 47 Class I and II streams, and the road corridor is adjacent to Twin Island and Cavern lakes. This alternative is adjacent to or crossing 16,996 linear ft (3.2 miles) of freshwater lakes or saltwater areas (Table 3-6). However, significantly less benefit would occur from these road improvements because NFSR 27 would continue to be a gravel surface road. Therefore, the decreased sedimentation and turbidity benefits from implementation of Alternative 4 would primarily occur only along the Common Route.

Cumulative Effects

Sedimentation and turbidity would be reduced to adjacent ditches, streams, and lakes as a result of roadway paving. This reduction is expected to be long-term, which will aid in restoring fish habitat adjacent to streams and in protecting karst resources.

Mitigation

The proposed project would result in an overall benefit to fish habitat, although water quantity (detention/retention) BMPs would be required to mitigate for increased surface water runoff, particularly in areas adjacent to lakes and saltwater bodies.

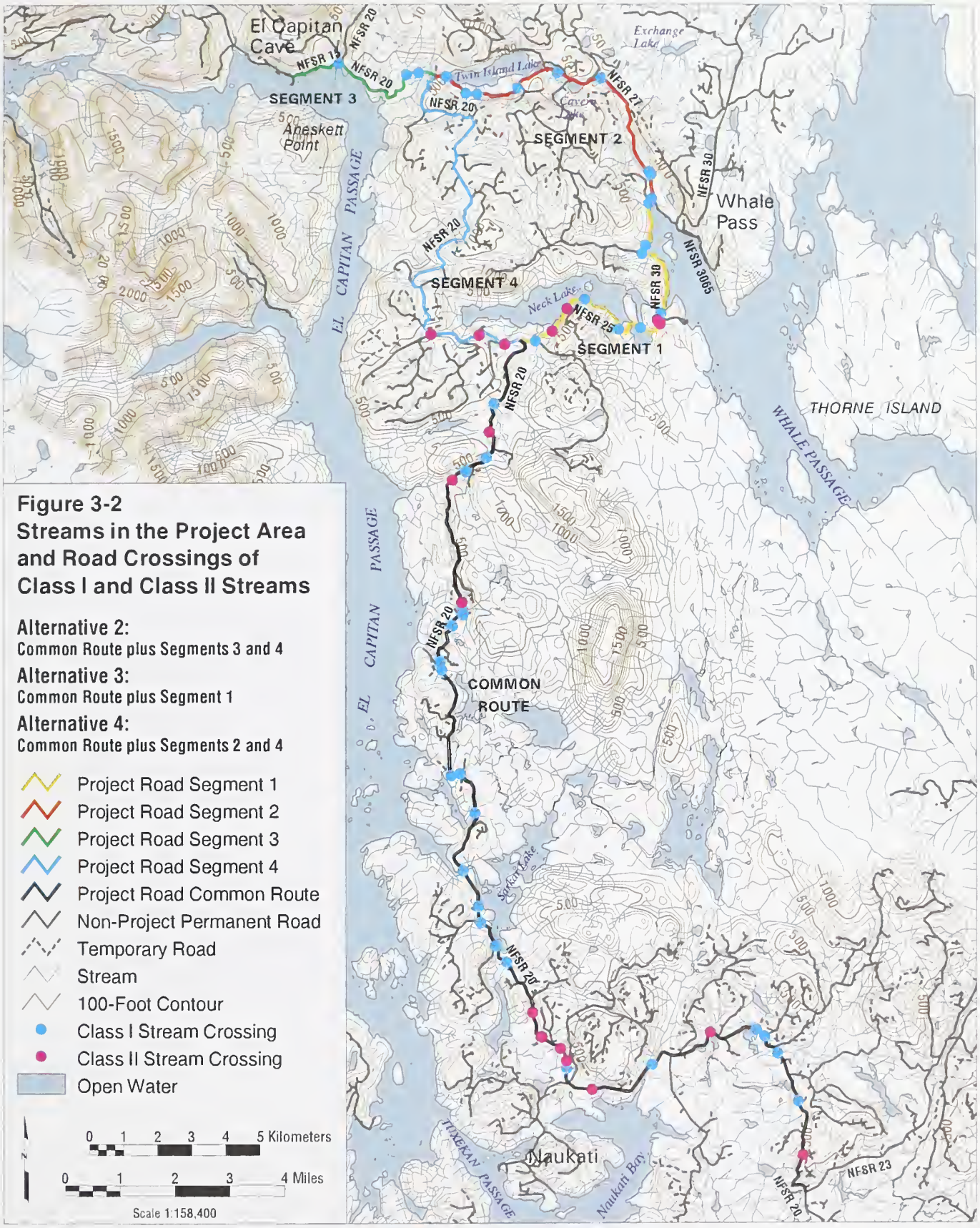
OTHER ENVIRONMENTAL EFFECTS

Fisheries and Water Quality

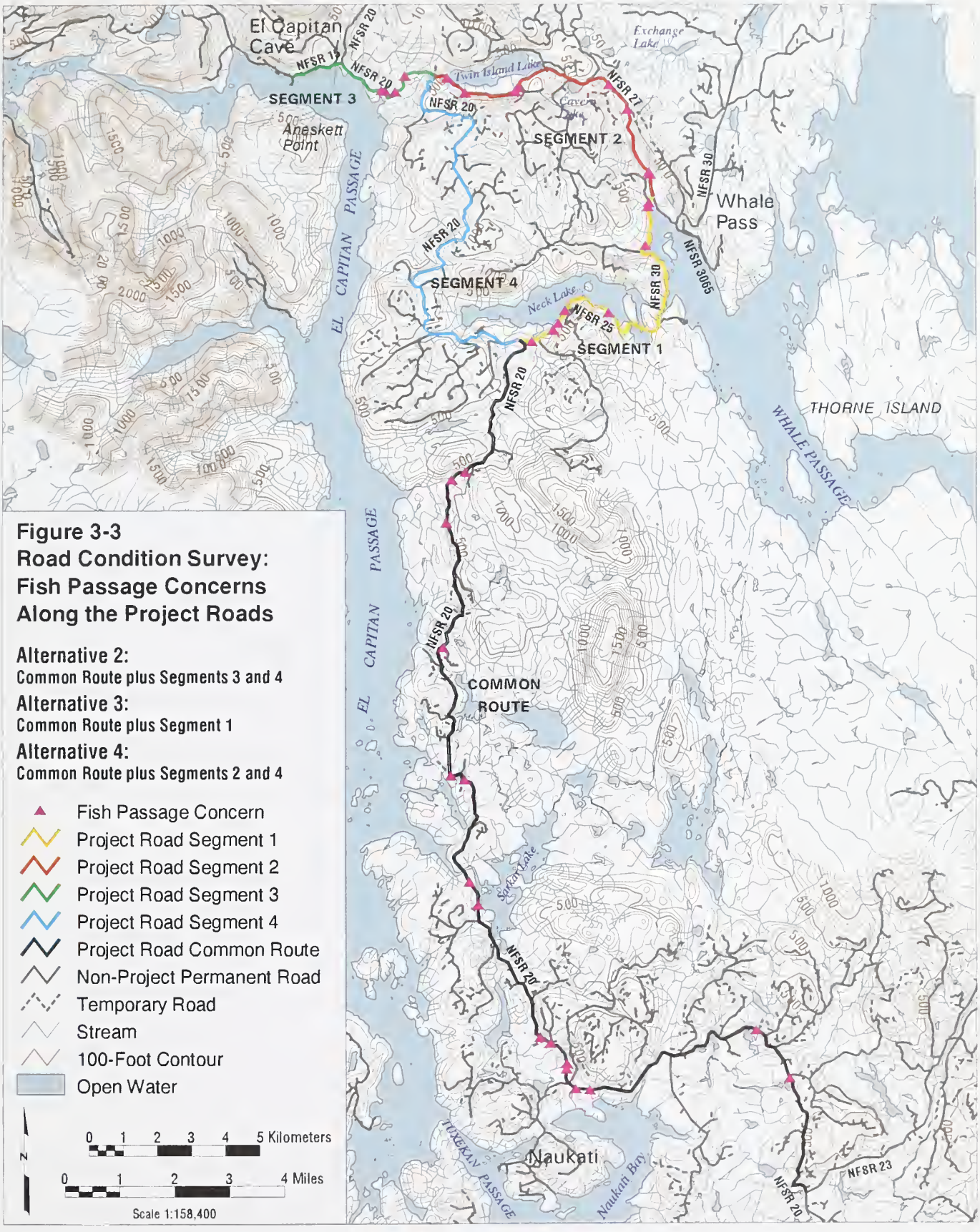
Existing Conditions

Numerous streams cross the existing road alignment in each segment of the proposed project (Figure 3-2). Due to the relatively heavy rainfall that occurs throughout the year on Prince of Wales Island, many of these streams are perennial. The runoff to these streams is primarily from rainfall and moderate snowmelt. Consequently, the highest flows tend to occur in the wetter months of October through December, and the lowest flows typically occur from January through March, and again from mid-May through August.

Many of these streams cross under the existing roadway through culverts of various sizes and shapes. The larger streams (such as Chum, Sarkar, Turn, and Yatuk creeks) are crossed by way of bridges. The Forest Service inventoried all the major culverts in the project area in 1999 to identify fish passage problems. Fish passage concerns were based on the percent of culvert blockage, perched at the downstream water surface, gradient, and the ratio of culvert width to bank width. A total of 36 culverts on Class I and II streams had some combination of these factors that contributed to a concern for fish passage (Figure 3-3). Sixteen were in the Common Route, eight each in Segments 1 and 2, four in Segment 3, and none in Segment 4. Despite these concerns, only one stream had a culvert that was considered a substantial barrier to fish passage (Route 20, Mile 76.978) and six streams were identified as having blockages of 50 percent. There were also 14 damaged culverts, which contributed to the blockage problems in some cases.



Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rpt_st-xing.gra created by rpt_st-xing.aml Date: July 06, 2001



Prepared by Parametrix, Inc. File: elcap/plotamls/plots/rcs_fp.gra created by rcs_maps.aml Date: July 06, 2001

During these surveys, the streams were reclassified based on fish sampling information (Table 3-7). These data vary to some degree from the GIS database layers available for this EA (which were not yet updated from the streams survey) but are assumed to be more accurate for assessing stream classification, fish use, and habitat conditions upstream and downstream of the road crossing. Therefore, these data were used for the assessment of fish resources in the project area.

Table 3-7. Classification of Streams Crossed by the Existing Roadways

		Stream Class				
Segment	NFSR #	I	II	III	IV	Unknown
Common Route	20	13	17	19	16	-
1	30	5	0	1	7	3
	25	4	4	3	2	2
2	27	6	4	6	2	-
3	20	4	4	0	2	-
	15	2	0	0	2	-
4	20	0	0	3	4	-

Limited fish distribution data are available for most streams in the project area. However, the culvert condition survey documented the occurrence of anadromous and resident salmonid species in a number of the Class I and II streams that cross the existing roadway (Table 3-8). Areas upstream and downstream of the crossings were checked for the occurrence of salmonids. The salmonid species found in the streams included cutthroat, Dolly Varden, steelhead trout, and coho, sockeye, chum, and pink salmon (USDA 1999). Chinook salmon are present in the waters around the island, but do not occur in the project area. Other fish species that occur in the area include sculpin (*Cottus* spp.) and stickleback (*Gasterosteus aculeatus*).

Table 3-8. The Number of Class I or II Streams in Each Highway Segment Where Salmonids Were Observed Upstream or Downstream of the Road Crossing

	Highway Segments				
Species	Common Route	1	2	3	4
Cutthroat trout (*Oncorhynchus clarki*)	10	5	5	1	na
Dolly Varden trout (*Salvelinus confluentus*)	12	2	4	7	na
Chum salmon (*O. keta*)	1	0	0	1	na
Coho salmon (*O. kisutch*)	4	4	4	6	na
Pink salmon (*O. gorbushka*)	1	3	0	1	na
Sockeye salmon (*O. nerka*)	0	0	1	0	na
Steelhead trout (*O. mykiss*)	2	3	1	1	na

na = No Class I or II streams documented in Segment 4.

Although salmonids were not found in all the Class I and II streams in the project area, this is likely due to the inability to sample the larger streams, or the limited extent of the surveys. Similarly, the apparent absence of these species in other streams cannot be considered proof that they do not occur either upstream or downstream of the immediate road crossing point.

The existing road also crosses the flood plains of numerous streams along the alignment. Most of the flood plains are confined to relatively narrow corridors of the small streams that are crossed. The existing roadway typically crosses the stream perpendicular to the streambed, thereby minimizing the cross-sectional area covered by the roadway fill. The roadway also crosses the larger streams (such as Sarkar, Turn, Yatuk, and Chum creeks).

Water quality data are generally unavailable for these surface waters, primarily because there has been no need to collect the data. Surface water quality is likely excellent in the project area due to the limited sources of pollution. Logging has led to increased sediment loading to many of the streams, resulting in an increase in turbidity. However, these effects can be relatively short-term, as truck traffic associated with logging moves to other areas and as new vegetation establishes. There are no available data to quantify the extent of logging- or road-related impacts to the streams, through either turbidity or sedimentation, in the project area, although there is recent information that documents the occurrence of sedimentation and debris that moved into karst systems and features (Wissmar et al. 1997). In addition, recent studies have demonstrated aquatic productivity differences between carbonate and non-carbonate dominated catchment areas and their significance (Bryant and Swanston 1998).

Groundwater data are also not available for the project area. However, because the area is generally underlain by glacial till soils that restrict vertical movement of water, there are likely pockets of perched groundwater at shallow depths throughout the area. This perched groundwater may contribute to wetland conditions in some areas. There are no known groundwater wells in the immediate project area.

Effects of the Alternatives

Forest managers throughout the Pacific Northwest recognize that forest roads are typically associated with ongoing impacts to aquatic resources (Furniss et al. 1996). Road-related impacts typically result from the concentration of both surface water runoff and intercepted subsurface discharge. The alteration of local hydrology can result in altering the stream flow patterns, sediment loading, bank erosion, and the distribution of fish species (Beschta 1978; Fowler et al. 1988).

Short-Term Construction Impacts

The amount of land disturbance that would occur through the road widening project, along with the prevailing rainfall patterns, present a difficult challenge to effectively control erosion and sedimentation in the area streams during construction. These challenges are particularly difficult at road crossings and areas adjacent to the streams and lakes within the project area. Roads have been identified as a primary source of fine sediment associated with forest management practices. Increased sediment loading to surface waters results in increased turbidity and increased sedimentation of the stream substrate as described under Issue 5. Fine sediment in spawning gravels can affect the quality of aquatic habitat for salmon and trout. Reproductive success of trout is reduced as levels of fine sediment (0.25 in. [<6.5 mm]) exceed 20 percent in spawning gravels (Bjornn and Reeser 1991).

In addition to erosion and sediment loading to surface waters, the construction activities increase the risk of contamination from spills or leaks of solvents, fuels, and other toxic construction products. The runoff of these contaminants to downstream waters would result in adverse water quality degradation.

The number of streams per mile of road is similar for all of the action alternatives (2.01 to 2.17 streams/mile) and is also similar for the number of streams crossed (although Alternative 2 would have the fewest streams crossed [Table 3-9]) and the fish species observed within streams (Table 3-10). Alternative 1 (no-action) would have the least impacts to the streams in the project area, with only minor impacts from culvert maintenance projects. However, runoff from the existing roadway would continue to add sediment to the area streams, although the extent of the impacts from this long-term and chronic sediment loading has not been quantified. The action alternatives would result in paving all or most of the highway segments in the corridor, which would reduce the long-term sediment loading to the streams but increase the volume of surface water runoff. Pollutants from vehicular traffic along the existing unpaved highway would likely enter the area streams at a slower rate than from paved surfaces, due to some infiltration of runoff. Although pollutants in the runoff from paved surfaces could reach the streams more quickly, this would most likely occur during periods of high stream flows, which might minimize the impacts to aquatic resources through greater dilution rates.

Table 3-9. Classification of Streams Crossed by Action Alternative

		Stream Class					
Alternative	Segments	I	II	III	IV	Unknown	Total
2	Common Route Segment 3 Segment 4	19	21	22	24	–	86
3	Common Route Segment 1	22	21	23	25	5	91
4	Common Route Segment 2 Segment 4	21	21	28	22	–	92

Table 3-10. The Number of Class I or II Streams Where Salmonids Were Observed Upstream or Downstream of the Road Crossing, by Action Alternative

	Action Alternative		
Species	2	3	4
Cutthroat trout (*Oncorhynchus clarki*)	11	15	15
Dolly Varden trout (*Salvelinus confluentus*)	19	14	16
Chum salmon (*O. keta*)	2	1	1
Coho salmon (*O. kisutch*)	10	8	8
Pink salmon (*O. gorbushka*)	2	4	1
Sockeye salmon (*O. nerka*)	0	0	1
Steelhead trout (*O. mykiss*)	3	5	3

Alternative 2 would cross the least number of Class I and II streams (about 41) of the three action alternatives. Alternative 3 would have the fewest miles of the highway widened (30.9 miles) and Alternative 4 would have the most (39.6 miles). Although Alternative 3 has the shortest length of highway widened of the three action alternatives, it would cross about the same number of Class I and II streams as Alternative 4 (about 47). Alternative 3 would also have the most potential to impact Neck Lake, as it follows the southern shoreline of the lake.

In addition to the relatively large number of Class I and II stream crossings for Alternative 4, about 15.1 miles of the roadway would be widened but remain unpaved. The unpaved sections could result in a longer period of increased sediment loading to the area streams than the paved sections, from runoff of unconsolidated roadbed material. However, the duration of the construction process would be greater for paved roadways. This longer construction phase would increase the potential for contaminant loading to the streams from spills or leaks of construction products.

Long-Term Operational Impacts

Increased impervious surface area in the project corridor, as a result of the action alternatives, would result in increased surface water runoff to the area streams. Runoff volumes would likely be slightly greater from paved segments, compared to unpaved segments, due to some infiltration through the roadbed. Therefore, the increased runoff would likely be greatest for Alternative 2, which has the longest stretch of paved surface areas (36.8 miles). Alternatives 3 and 4 would have 30.9 and 24.5 miles of paved roadway, respectively. However, the increased runoff would be proportionally discharged to a number of streams, and the increased volume would be minor compared to the total flow carried by these streams. Therefore, substantial adverse effects related to increased runoff are not expected.

As a result of the increased runoff, the flow rate through some of the stream crossings or drainage culverts along the project corridor would exceed conveyance capacities. However, the proposed road improvement project would replace all the existing culverts that do not have a conveyance capacity of at least a 25-year frequency flood. In addition, culverts that do not provide adequate fish passage conditions would also be replaced.

Although the action alternatives would increase surface water runoff volumes, the sediment loading to the project areas streams would be reduced because of decreased dust production and surface erosion. Alternative 2 would have the largest amount of paved road surface, and therefore the greatest potential for the reduction in long-term sediment loading. Alternative 4 would have the least amount of paved surface and also have the greatest amount of unpaved (and widened) road surface, and is therefore expected to have the greatest potential for sediment loading. Alternative 4 also crosses a relatively high number of Class I and II streams (about 47).

The improved roadway would also result in greater pollutant loading (e.g., metals, petroleum hydrocarbons, and other vehicular pollutants). However, given the low traffic volumes expected along the project corridor, the dilution of these pollutants by the increased surface water runoff is unlikely to result in noticeable water quality impacts to the streams. Although Neck Lake would receive much of the runoff from Segment 1, the lake's water quality is not likely to be adversely affected because of its size. The improved roadway would also improve traffic safety along the

project corridor, thereby reducing the potential for accidents that could result in spills of toxic material.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation Act requires that all federal agencies consult with National Marine Fisheries Service (NMFS) when any federal project "may adversely affect" essential fish habitat (EFH). Specifically, the Magnuson-Stevens Act requires the evaluation of proposed projects with a federal nexus to evaluate impacts on habitat of commercially managed fish populations. Essential fish habitat (EFH) has been defined for the purposes of the Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (NMFS 2000). NMFS has further added the following interpretations to clarify this definition:

- "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate;
- "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities;
- "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and
- "Spawning, breeding, feeding, or growth to maturity" covers the full life cycle of a species.

The purpose of this section is to satisfy the requirements for an EFH assessment.

NMFS has determined that the proposed project may adversely affect EFH for chum, pink, coho, and sockeye salmon (Balsiger, 2001 personal communication). Within the project area, EFH for these species is limited to Class I streams, marine waters, and intertidal areas used by these anadromous fish species. As discussed in the Effects of the Alternatives section, the project is expected to reduce the amount of sedimentation in the streams crossed by the project by paving the existing gravel road surface.

Procedures to minimize road construction and long-term operational impacts on water quality and aquatic resources are discussed in the Mitigation section. The application of BMPs would minimize adverse water quality and stream sedimentation impacts during construction activities, and adequate stormwater retention/detention facilities will be provided to minimize erosion potential in downstream reaches. These mitigation measures would be similar to those outlined in the Forest Plan and the Soil and Water Conservation Handbook prepared by the USDA Forest Service, Alaska Region (USFS 1996).

The culverts along the highway alignment would be replaced to provide adequate fish passage on Class I and Class II streams. Existing culverts for Class I streams would be replaced with bridge structures, while culverts at Class II streams would also be replaced. Existing bridges would not be replaced unless there is a risk of structural failure. The bridge or culvert replacement

activities would be coordinated with ADF&G to ensure that they are adequately designed and installed. Therefore, the project would improve fish passage conditions in the highway corridor compared to existing conditions.

For these reasons, the proposed highway project is unlikely to adversely affect EFH or salmonid populations in the streams crossed by the project. The project is also not expected to affect intertidal or marine habitat in the area.

Cumulative Effects

Over the long-term, the paved roads and culvert replacements planned would result in an improvement in fish habitat along the project roadway.

Mitigation

To minimize road construction impacts on water quality and aquatic resources, a temporary sediment and erosion control plan would be prepared by the Forest Service and implemented by the project contractor. In addition, the avoidance and minimization measures outlined in the plan would be included in the construction contracts. The plan will be developed in cooperation with ADF&G and will meet the requirements of the National Pollutant Discharge Elimination System (NPDES), Alaska Title 16 fish passage, and Section 401 water quality standards permits. The plan would provide detailed specifications for appropriate erosion control measures to be installed to meet water quality standards and require the contractor to prepare a site-specific Spill Prevention and Countermeasure or Pollution Control Plan. In addition, measures similar to those established in the Forest Plan and the Soil and Water Conservation Handbook would be implemented during project construction.

The application of BMPs would also minimize adverse water quality and stream sedimentation impacts during construction activities. These mitigation measures would be similar to those outlined in the Forest Plan and the Soil and Water Conservation Handbook prepared by the USDA Forest Service, Alaska Region (USFS 1996).

VEGETATION

Existing Conditions

Vegetation Types

Vegetation types in the vicinity of the project roadways, as identified in the Forest Service GIS layer, include old-growth forest; regenerating forest; and muskeg and non-forested wetlands (Table 3-11). Old-growth forest and regenerating forest comprise the majority of the area adjacent to the roadways. Forested wetlands, which occur within both old-growth forest and regenerating forest, are discussed under Issue 4.

Table 3-11. Vegetation Types by Road Mileage in the Vicinity of Project Area Roads

Vegetation Type	Road Segment[1]					Total
	Common Route	Segment 1	Segment 2	Segment 3	Segment 4	
Old-growth forest						
High-volume	6.7	0.2	0.1	0.8	0.4	8.2
Mid-volume	4.1	1.1	0.7	1.1	0.4	7.4
Low-volume	4.1	2.7	0.7	0.2	0	7.7
Subtotal	14.9	4.0	1.5	2.1	0.8	23.3
Regenerating forest	7.3	1.4	4.5	0.4	7.5	21.0
Muskeg and non-forested wetlands	2.3	0.8	0.1	0.9	0.6	4.7
Total[2]	**24.5[3]**	**6.2[4]**	**6.1**	**3.3**	**9.0**	**49.3**

[1] Road miles by vegetation type are calculated based on existing vegetation adjacent to project area roadways.
[2] Totals may not be exact due to rounding within vegetation type.
[3] Does not include the 0.03 mile of roadway adjacent to salt water.
[4] Does not include the 0.02 mile of roadway adjacent to salt water and the 0.2 mile of roadway adjacent to fresh water.

Old-Growth Forest

Old-growth forest includes three subcategories (high, medium, and low volume), based on board feet. Timber volume must be at least 8 thousand board feet (MBF) per acre for a stand to be designated as old-growth forest. The majority of old-growth forest in the project roadway vicinity occurs along the Common Route and on the north side of Neck Lake. Dominant old-growth forest vegetation includes western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sichensis*), and western redcedar (*Thuja plicata*). Common understory species include Sitka alder (*Alnus crispa*), blueberry (*Vaccinium* spp.), salal (*Gaultheria shallon*), Sitka sedge (*Carex sitchensis*), sword fern (*Polystichum munitum*), skunk cabbage (*Lysichiton americanum*), and deer cabbage (*Fauria crista-galli*). Forested wetlands and mixed forested wetlands with at least 8 MBF per acre are included in the old-growth forest vegetation type.

Regenerating Forest

In this analysis, regenerating forest is considered to be forested areas averaging less than 8 MBF per acre. This category includes stands that have been previously harvested, as well as unharvested areas that are naturally low in timber volume. Trees in this category include seedlings, saplings, and young poles and are generally less than 9 in. diameter-at-breast-height (dbh). Dominant tree species are western hemlock and Sitka spruce. Forested wetlands and mixed forested wetlands with less than 8 MBF per acre are included in the regenerating forest vegetation type. Regenerating forest occurs mostly around Segment 2, Segment 4, and the southern part of the Common Route.

Muskeg and Non-forested Wetlands

Muskeg and non-forested wetlands, which occur in areas with poor drainage and wet soil conditions, are present throughout the project roadway vicinity. Common plant species in this

habitat type include several types of mosses, bog laurel (*Kalmia microphylla occidentalis*), Labrador tea (*Ledum groenlandicum*), bog blueberry (*Vaccinium uliginosum*), deer cabbage, skunk cabbage, Alaska yellow cedar (*Chamaecyparis nootkatensis*), and lodgepole pine (*Pinus contorta*). Trees in muskeg areas are slow growing, and maximum tree height is less than 60 ft. Moss muskeg wetlands, emergent tall sedge muskeg wetlands, and emergent short sedge wetlands are included in the muskeg and non-forested wetlands vegetation type.

Sensitive and Rare Plants

Field surveys for sensitive and rare plants were conducted during summer 2001. For this EA, general habitat associations were reviewed to identify sensitive and rare plants that may occur in the vicinity of the road projects. These species include two U.S. Fish and Wildlife Service (USFWS) plant species of concern, seven Forest Service sensitive plant species, and one State of Alaska rare plant species (Table 3-12).

Effects of the Alternatives

The proposed action would result in the loss of 22 to 33 acres of vegetation where the one-lane road would be expanded to two lanes, and the conversion of 154 to 203 acres of old-growth forest to shrub and/or grass habitat where the road shoulder and roadside clear zone would occur on either side of the roadway (Table 3-13). An analysis of wetland impacts is provided in Table 3-4. Construction staging areas may also result in temporary disturbance to vegetation where road equipment is stored. Construction equipment could accidentally introduce noxious weeds to the project roads from locations outside the project area where the equipment was previously used. At those locations, noxious weed seeds and reproductive parts may have become attached to the wheels and other areas of this equipment. In addition, road widening could result in the disturbance or loss of sensitive and rare plants.

Alternative 3 would result in the removal and conversion of less vegetation (Table 3-13) primarily due to the lower amount of road mileage for this alternative. However, Alternative 3 does result in the removal and conversion of more old-growth forest than Alternative 2. Alternative 4 has the longest road mileage, and consequently, the highest amount of overall vegetation loss and conversion, although loss and conversion of old-growth forest is less than under the other two action alternatives. Other effects to vegetation from the implementation of Alternatives 3 and 4 are similar to Alternative 2.

Table 3-12. Sensitive and Rare Plants that May Occur in the NPOW/El Capitan Road Vicinity

Common Name	Scientific Name	Habitat Association
USFWS Species of Concern		
Ascending moonwort fern	*Botrychium ascendens*	Grassy fields up to 2,500 m in elevation
Super round wedge moonwort fern	*Botrychium*, unnamed	Unknown
Forest Service Sensitive Species		
Davy mannagrass	*Glyceria leptostachya*	Shallow fresh water and stream and lake margins
Edible thistle	*Cirsium edule*	Wet meadows and open woods along glacial streams
Loose-flowered bluegrass	*Poa laxiflora*	Moist, open lowland woods and open-forest meadows
Queen Charlotte butterweed	*Senecio moresbiensis*	Shady wet areas and bogs of montane to alpine habitats
Slender bog orchid	*Platanthera gracilis*	Wet open meadows
Truncate quilwort	*Isoetes truncata*	Shallow water of lakes and ponds
Wright filmy fern	*Hymenophyllumwrightii*	Moist woods
Alaska State Rare Species		
Rattlesnake fern	*Botrychium virginianum* spp. *europaeum*	Moist woods and thickets; seldom in meadows

Table 3-13. Vegetation Removed and Converted by Alternative

	Acres Removed[1]				Acres Converted[2]			
Vegetation Type	**Alt. 1**	**Alt. 2**	**Alt. 3**	**Alt. 4**	**Alt. 1**	**Alt. 2**	**Alt. 3**	**Alt. 4**
Old-growth forest[3]								
High-volume	0	5.7	5.0	6.3	0	43.3	38.0	39.8
Mid-volume	0	4.2	3.8	4.9	0	31.8	29.2	29.2
Low-volume	0	3.1	5.0	3.2	0	23.9	38.0	27.4
Subtotal	0	13.0	13.8	14.4	0	99.0	105.2	96.4
Regenerating forest	0	11.1	6.3	14.8	0	84.9	48.7	107.0
Muskeg and non-forested wetlands[4]	0	2.8	2.2	3.5	0	0	0	0
Total	**0**	**26.9**	**22.3**	**32.7**	**0**	**183.9**	**153.9**	**203.4**

1 Includes removal due to paving/graveling of the new roadway. Acres removed is calculated based on the average existing roadway width (18 ft) compared to the average improved roadway width (24 ft for paved roads, 28 ft for gravel roads). This difference in average roadway width is multiplied by the miles of roadway improvements for each vegetation type to yield the total acres removed (for each vegetation type).

2 Includes vegetation clearing adjacent to the roadway to provide vehicle drivers with adequate sighting distances. Additional cleared area from the two-lane road is 52 ft.

3 Note that old-growth forest includes forested wetlands. For a more complete analysis of wetland impacts, refer to Issue 4.

4 For this analysis, it is assumed that vegetation clearing adjacent to the roadway would not be necessary for muskeg and non-forested wetlands areas. In these areas, most of the vegetation is low shrubs, mosses, and forbs that would not interfere with vehicle driver sighting.

Cumulative Effects

The potential for additional long-term impacts to vegetation under the proposed action is minimal. The presence of more vehicles on the road would increase the likelihood of the spread of noxious weeds. However, implementation of a noxious weed eradication plan would minimize the introduction and spread of noxious weeds in the project area.

Mitigation

Vegetation impacts from project implementation would be minimized through the planting of native plants in areas of bare soil to minimize the potential for the spread of noxious weeds and to avoid topsoil erosion. The introduction of noxious weeds to new roadside areas would be minimized through the eradication and/or control of currently existing noxious weeds in the project vicinity and the careful washing of construction equipment prior to its use in the roaded area. In addition, where the roadway was realigned, vegetation would be replanted with native species that are available commercially. If not available, then a nonaggressive, short-lived non-native seed mixture will be used to curtail surficial erosion, while allowing for colonization of native species two to three years after construction.

Plant surveys for noxious weeds, biologically significant plant communities, and sensitive and rare plants will be conducted prior to construction to ensure that impacts to native plants are minimized to the extent practicable. A biological evaluation for sensitive and rare plants will be prepared following the field surveys to ensure protection of these plants. If not available, then a nonaggressive, short-lived non-native seed mixture will be used to curtail surficial erosion, while allowing for colonization of native species two to three years after construction.

Wildlife

Existing Conditions

Habitat Types

Wildlife habitats in the vicinity of the project roadways include old-growth forest; regenerating forest; muskeg and non-forested wetlands; forested wetlands, streams, and lakes; and estuaries and marine waters. Further descriptions of forest, muskeg, and wetland habitat types are included in the vegetation and wetland sections of this EA.

Forested areas occur throughout the vicinity of the project roadways and provide habitat for a variety of wildlife, including black bear (*Ursus americanus*), Alexander Archipelago wolves (*Canis lupus*), Sitka black-tailed deer (*Odocoileus hemoinus sitkensis*), marten (*Martes americana*), northern flying squirrels (*Glaucomys sabrinus*), and cavity-nesting songbirds. Wildlife use of forested habitats is affected by forest structure, and older forests, which contain more complex structural features, generally provide higher quality habitat than younger forests.

Wetlands, streams, and lakes provide habitat for ducks and other waterfowl, mink (*Mustela vison*), beaver (*Castor canadensis*), river otter (*Lontra canadensis*), and boreal toads (*Bufo boreas*). Larger lakes in the project area vicinity include Sarkar Lake (east of the Common Route), Neck Lake (north of the junction of the Common Route with Segments 1 and 4), and Twin Island Lake and Cavern Lake (north of Segment 2) (Figure 2-2). Muskeg, which is scattered throughout the vicinity of the project roadways, provides relatively low quality habitat for most wildlife species. Marine waters and estuaries (i.e., Naukati Bay, El Capitan Passage, and Whale Passage) provide habitat for marine mammals and a variety of oceanic birds and shorebirds.

Threatened, Endangered, and Sensitive Species

Six species designated as Forest Service sensitive species and/or federally listed as endangered or threatened may occur in the vicinity of project roadways (Table 3-14).

Bald Eagle

In Southeast Alaska, bald eagles generally nest along the coastlines and forage in riverine, estuarine, and saltwater areas. The Interagency Agreement between the Forest Service and USFWS requires that a 330-ft buffer around each bald eagle nest site be maintained (USFWS and USFS 1990). Activities inconsistent with current bald eagle use are restricted within this zone. Eagle nests are known to occur within the vicinity of the project roadways at Naukati Bay, Sarkar Lake, Whale Passage, and the northern end of El Capitan Passage. However, no eagle nests were located within 330 ft of the project roadways during a 1999 bald eagle survey conducted by the Forest Service in the vicinity of the Common Route.

Table 3-14. Threatened, Endangered, and Sensitive Wildlife Species Potentially Occurring in the NPOW/El Capitan Road Vicinity

Species	Federal Status[1]	Forest Service Status[2]	Occurrence in Roadway Vicinity and Forest Plan Standards and Guidelines
Birds			
Trumpeter swan (*Cygnus buccinator*)	None	Y	Sarkar Lake and Neck Lake are used by wintering swans. Forest Plan general guidance is to limit developments within ½ mile of swan wintering areas during the wintering period (USFS 1997b).
Peale's peregrine falcon (*Falco peregrinus pealei*)	None	Y	Not expected to regularly occur in the project area, due to lack of suitable cliffs for nesting.
Queen Charlotte goshawk (*Accipiter gentilis laingi*)	None	Y	One nest is approximately 1,700 ft from the Common Route. Another nest is approximately 1,000 ft from Segment 4. No other goshawk nests within ½ mile of project roadways. Forest Plan standards and guidelines require a 600-ft buffer around nest site for road construction (USFS 1997b).
Osprey (*Pandion haliaetus*)	None	Y	No known nests on Prince of Wales Island.
Marine Mammals			
Humpback whale (*Megaptera novaeangliae*)	E	N	Present from May through December in marine waters in vicinity of project roadways (i.e., El Capitan Passage, Whale Passage). Peak numbers are usually during late August and September, with substantial numbers in fall as well (USFS 1997a). Forest Plan standards and guidelines are to protect habitat and avoid "take" (USFS 1997b).
Steller sea lion (*Eumetopias jubatus*)	T	N	Habitat is present in marine waters in vicinity of project roadways (i.e., El Capitan Passage, Whale Passage). Nearest known haulout is over 10 miles from project roadways. Forest Plan standards and guidelines are to protect habitat and locate developments at least one mile from known haulouts and avoid "take" (USFS 1997b).

[1] E = federally listed as endangered. T = federally listed as threatened.

[2] Y = listed on Regional Forester (Region 10) sensitive species list.
N = not listed on Regional Forester (Region 10) sensitive species list.

Other Species of Special Interest

Game Animals

Game animals hunted on Prince of Wales Island include deer, wolf, bear, beaver, grouse, ptarmigan, and marten. Sitka black-tailed deer occur throughout northern Prince of Wales Island. Preferred habitat includes low-elevation, high-volume old-growth forests during winters of extended snow conditions. During winter, deer depend on the forest canopy for snow interception. As with deer, Alexander Archipelago wolves occur throughout northern Prince of Wales Island. Wolves tolerate a wider range of habitat than deer; however, the primary food base of wolves is deer. Consequently, wolf populations generally correlate directly with deer populations. Black bear utilize a variety of habitats on northern Prince of Wales Island, including forest openings and muskegs. Marten occur in forested habitats, especially high-volume old-growth forest on Prince of Wales Island. More detailed information regarding hunting on Prince of Wales Island is provided in the Subsistence section of this EA.

Effects of the Alternatives

Alternative 1 (no-action) would not affect wildlife presence and use of habitat near the project roads. Implementation of Alternative 2 would affect wildlife through habitat loss and modification, temporary construction noise disturbances, and the potential for increases in roadkill because vehicles would be traveling at a faster speed on the improved roads. Habitat loss is not as significant on an existing roadway than if a new road is established in an undisturbed forest. Effects on game populations are described in the subsistence section of this EA.

Threatened, endangered, and sensitive species that may be affected by the proposed project include trumpeter swans, Queen Charlotte goshawks, humpback whales, and Steller sea lions (Table 3-12). Wintering trumpeter swans at Sarkar Lake could be affected through disturbance from roadway construction under all action alternatives, although this affect would only be temporary. The swans would be expected to move to areas of the lake away from construction work. Under Alternative 3, temporary effects to swans could also occur at Neck Lake. Known nest sites of goshawks are located over 1,000 ft from project area roadways, beyond the 600-ft buffer recommendation in the Forest Plan standards and guidelines (USFS 1997b). Construction noise may be heard by humpback whales and Steller sea lions in El Capitan Passage, and the whales and sea lions, if present, may temporarily leave the area during times of higher noise disturbances.

Cumulative Effects

The road expansion planned for project roads, as well as the other roads on Prince of Wales Island, would result in both loss of wildlife habitat and an increase in wildlife road kill. With an increased speed limit, more road kills are expected, particularly for deer. Because pregnant does and does with fawns use roadsides at an increased rate compared to other deer, more substantial effects are expected to occur to this group of animals.

Mitigation

Wildlife habitat impacts from project implementation would be minimized through the planting of native vegetation in areas where vegetation was disturbed by equipment operations. In

addition, where the roadway is realigned, the area would be restored. To reduce the likelihood of roadkill, signs warning of the presence of game animals would be posted along the roadway, an aggressive public education campaign would be developed to alert residents and tourists of deer along the roadside, and roadside vegetation would be managed to ensure maximum visibility. To ensure protection of nesting goshawks and bald eagles, as well as wintering trumpeter swans, Forest Plan standards and guidelines and the Interagency Bald Eagle Agreement between the Forest Service and the USFWS (1990) would be followed. These guidelines include permitting no continuous disturbance within the surrounding 600 ft (from March 15 to August 15) for goshawks, protecting trumpeter swan wintering habitat, and conducting inter-agency consultation between the Forest Service and the USFWS to determine if activity restrictions are necessary where a bald eagle nest is located within 330 ft of the roadways proposed for improvement.

SUBSISTENCE

Existing Conditions

With the passage of the Alaska National Interest Lands Conservation Act (ANILCA), the U.S. Congress recognized the importance of subsistence resource gathering to the rural communities of Alaska. ANILCA (16 USC 31130) defines subsistence as:

> *The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade (ANILCA, 16 USC 3113 p. 390).*

ANILCA provides for "the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on public lands." It also legislates that "customary and traditional" subsistence uses of renewable resources "shall be the priority consumptive uses of all such resources on the public lands of Alaska." Non-rural residents are not provided a preference for the taking of fish and wildlife on public lands. Juneau and Ketchikan are the only communities in Southeast Alaska that have been determined to be non-rural by ANILCA and the Federal Subsistence Board.

In the vicinity of the proposed NPOW/El Capitan roadway improvements, residents from the communities of Coffman Cove, Point Baker, Port Protection, Whale Pass, Naukati Bay, Craig, Edna Bay, and Thorne Bay conduct subsistence activities along the project roadways (USFS 1997a). The dominant subsistence activities in the area are fishing, hunting, and trapping.

Subsistence fishing activities that use the project roads include harvest in both freshwater and marine environments. Species most frequently harvested include salmon, other finfish, and crabs (USFS 1997a). The fishery on Prince of Wales Island is considered a world-class attraction that draws the most visitors to the island. According to ADF&G, Prince of Wales Island is the fastest growing freshwater and marine sport fishery in the state. In 1999, days fished in freshwater areas totaled 75,857 days compared to 57,836 days in saltwater. Total anglers were 14,493 fishermen in saltwater and 15,397 fishermen in freshwater (Alaska Department of Fish and Game 1999a). People fish for five salmon species (chinook, sockeye, coho, pink, and chum), halibut, Dolly Varden, and hooligan. The freshwater fishery also includes grayling, and four

species of trout (steelhead, rainbow, cutthroat, and brook). Freshwater fishing is from a diversity of locations, including fishing piers and bridges associated with project roads.

Hunting and trapping are an important subsistence activity, and off-island residents are attracted to the island due to its large amount of roaded area. Important island species include deer, black bear, and wolf. The average harvest on Prince of Wales Island is similar to other larger Southeast Alaska islands (Admiralty, Baronof, and Chichagof), but harvest is less variable on an annual basis because roaded access (the primary transportation access used on Prince of Wales Island) is more reliable in poor weather than the boat access primarily used on Admiralty, Baranof, and Chichagof islands (Paul 2001, personal conversation). The percentage of hunters using highway vehicles to hunt deer has increased significantly over the past 10 years; 50 percent of hunters drove motor vehicles to hunt in 1993 compared to 77 percent from 1996 to 1999 (Alaska Department of Fish and Game 2000a). Over the long-term, ADF&G expects a decline in deer and wolves (and possibly black bear) on Prince of Wales Island as a result of continued timber harvest and conversion of old-growth stands to clearcuts and second-growth closed canopy stands. The existing federal subsistence doe hunt allowed on Prince of Wales Island, along with illegal harvests, may hasten this decline. If this decline occurs, ADF&G expects the Federal Subsistence Board to exclude non-Prince of Wales residents from hunting. Some local residents have already requested this proposal. If non-Prince of Wales residents are excluded from hunting on the island, it is possible that fewer in-state visitors may come to the island.

ADF&G also expects the expanding road system and increasing human population on Prince of Wales Island to result in long-term reductions in wolf numbers as a direct result of deer declines from habitat loss. The increased roaded access into remote wolf habitats is expected to result in both indirect mortality (road kill and habitat loss) and direct mortality (ease of trapping the more remote areas). However, the old-growth reserves are helping to maintain the wolf population on the island. Reported island harvest over the past 15 years ranges from 18 wolves (1985/1986) to 59 wolves (1996/1997), with the most recent harvest of 23 wolves in 1999 to 2000 (ADF&G 2000b). Wolves are primarily trapped using boats and highway vehicles, with significantly fewer transport methods using planes and walking. The average harvest of wolves per trapper has increased steadily over time, from 1.3 wolves trapped in 1985/1986 to 3.8 wolves in 1997/1998, although most recently the number of trappers has significantly declined from a high of 42 trappers in 1990/1991 to 21 trappers in 1997/1998. Most trappers were residents of Prince of Wales Island.

Black bear are primarily hunted from the roadside rather than boat or air, and about 65 to 75 percent of the hunters since 1976 were non-residents. Alaska residents from outside Prince of Wales Island account for about 16 percent of the harvest and local residents account for about 19 percent of the harvest. The most recent published black bear harvest on the Thorne Bay Ranger District is 99 bears during the 1999/2000 season. Current harvest on Prince of Wales Island is believed to be within sustainable levels and represents 5.4 percent of the population estimate. Harvest primarily occurs during the spring months from May 1 - 20 (ADF&G 1999b).

Effects of the Alternatives

Alternative 1 (no-action) would not affect availability, access, and competition for subsistence resources. Effects to subsistence resources from implementation of the action alternatives are described below.

Availability of Subsistence Resources

The proposed action would include replacement of culverts to ensure fish passage along road crossings. Following road construction, more fish habitat would be available for reproduction. The road improvements would not be expected to affect game availability, although increased road kill may occur as a result of higher speed limits and an increased number of vehicles on the roads when the ferry service begins at Coffman Cove.

Access to Subsistence Resources

Road construction activities may cause a short-term restriction in access to subsistence resources during road construction and a long-term improvement in road access when road construction is completed. With the opportunity for faster travel on two-lane and paved roads, hunters and trappers would be attracted to the area, where they would likely use the project roadways to access smaller roads for fishing, hunting, and trapping.

Competition for Subsistence Resources

With improved access, competition for subsistence resources in the project vicinity may increase, as more off-island residents may be attracted to the project roads for subsistence hunting. No changes are expected in the extent of residents fishing and hunting.

Conclusion

Based on the analysis of subsistence resources in terms of abundance and distribution, supply and demand, access and competition, and historical patterns of utilization, it is determined that the NPOW/El Capitan Road Improvements project will not result in a significant possibility of a significant restriction of subsistence users in the project area.

Cumulative Effects

The road improvements are not expected to have a significant affect on subsistence availability, but would improve access to subsistence resources, and may increase competition for these resources among off-island Alaska residents. As described in the Tongass Land Management Plan, competition occurs in areas where resources are abundant and access is available to local residents and other communities of Southeast Alaska. An example is Prince of Wales Island. The Southeast Alaska Federal Subsistence Regional Advisory Council has noted this increased use of resources and recommends decreases in harvest of deer, moose, and other wildlife species for non-rural residents to counteract the cumulative effects of increased subsistence harvest in areas where access may result in overharvest and increased competition.

Mitigation

No mitigation measures specific to subsistence are recommended.

Geology and Soils

Existing Conditions

Prince of Wales Island is part of the Alexander Archipelago, a group of islands that formed in warm, shallow seas during the Silurian Period about 438 to 408 million years ago. The limestone found in the island originated as marine reef and lagoonal deposits that were building

on volcano-cored islands straddling the equator. The islands were transported by plate tectonics to their present locations. Limestone and bedrock found on Prince of Wales Island consists of mudstone and graywacke (a dirty sandstone embedded in a muddy matrix), and marble (limestone that has been recrystallized by heat and pressure). During the Cretaceous Period (about 100 million years ago), igneous rock (granitic rock types) intruded the area (Brew et al. 1984). The heat and pressure resulting from the intrusions altered the surrounding limestone to marble, and produced zones of mineralization. Rock units have been offset by major north-south-trending faults, moving the rocks to their present location where they have been subsequently glaciated, weathered, and eroded.

Glaciation of the island has resulted in deposits of glacial till with depths from a few centimeters to more than 30 ft. At higher elevations on steeper slopes, glacial till soils are less than 20 in. thick. The glacial till soils restrict vertical movement of water, and likely cause pockets of perched groundwater at shallow depths throughout the area.

The geology and soil conditions in Southeast Alaska have been influenced by the cold temperatures and abundant rainfall. The climate conditions cause organic matter to accumulate and decompose slowly. At the same time, the rainfall tends to flush nutrients from the mineral soils. Poorly developed drainage patterns on Prince of Wales Island result in scattered wet, swampy conditions. Forested, poorly-drained organic soils are widely distributed through the project area. Other soil types in the project area include well-drained organic matter less than 20 in. thick over bedrock mineral soil, and relatively thick organic mats covering mineral soils.

The soils underlain by the project roads are primarily Class III, although Segments 2 and 4 have more Class II soils and Segment 3 has more Class I soils (Table 3-15). There are small amounts of Class IV soils on the Common Route and Segment 4. Class I soils are of low hazard, Class II are moderate hazard, Class III soils are high hazard, and Class IV soils are very high hazard.

Table 3-15. Soil Hazard Class by Segment in Miles

Soil Hazard Class	Common Route[1]	Segment 1[2]	Segment 2	Segment 3	Segment 4
I	6.5	2.2	2.5	1.8	2.1
II	5.6	0.3	2.5	0	4.4
III	12.1	3.5	1.2	1.5	2.1
IV	0.2	0	0	0	0.4
Total[3]	24.5	6.4	6.1	3.3	9.0

[1] No soil class exists for 0.03 mile of the Common Route because it is bordered by water.
[2] No soil class exists for 0.3 mile of Segment 1 because it is bordered by water.
[3] Totals may not be exact due to rounding within soil class.

The Class IV soils are generally avoided for road construction as these soils have a high potential for mass movement. The Class IV soils in the Common Route are located approximately 0.8 mile south of where the segment ends at Neck Lake. The Class IV soils in Segment 4 are located near the southeast end of Neck Lake.

Effects of the Alternatives

Alternative 1 (no-action) would not affect soil conditions of the project roads. Road construction for Alternatives 2, 3, and 4 would closely follow the existing road in most areas. Realignments

proposed include the straightening of sharp curves. The alternatives cross rolling terrain with side-hill cuts into glacial deposits overlying bedrock or, in low-lying areas, are cut into rock fills over soft organic deposits (peat and muck).

Some road segments would be realigned if deep peat deposits are encountered. These areas would be avoided because they are difficult to construct roads through and the organic deposits do not provide a solid supporting surface over the long term. Where road improvements are required in areas currently containing corduroy roads, the excavation and displacement technique would be used. This method requires excavation of peat deposits and filling with rocks. Because of the high precipitation rates and resulting natural moisture of the soils associated with the project roads, all non-rock excavation materials are unsuitable for use in construction of the roadway embankment and therefore must be discarded. Every effort would be made to use all suitable excess material in reconstruction of the roadway. The remaining waste material would be disposed of offsite in an upland area suitable for filling.

Where realignments are proposed, movement of soil and rock from cut slopes to fill slopes would be required. Cut-and-fill slopes would be shaped to resemble natural slopes. Exposed areas would be stabilized with fast-growing, non-aggressive seed mix to prevent wind and water erosion of the soil.

Construction activities would increase the road width (gravel or paved section) from 18 to 24 ft. The current cleared area ranges from 37 to 69 ft wide with an average width of 41 ft (weighted average). The improved road disturbance area would range from 61 to 128 ft wide with an average width of 93 ft (weighted average). Ground disturbance for these activities would be 335 acres under Alternative 2, 281 acres under Alternative 3, and 360 acres for Alternative 4.

Road construction on Class IV soils would occur under all alternatives because 0.2 mile of the Common Route is located on Class IV soils (Table 3-16). In addition, 0.4 mile of Class IV soils is located on Segment 4, which would occur under Alternatives 2 and 4. These areas are more prone to mass movement, and slope stability measures would be necessary to protect the soils resource in these areas.

Table 3-16. Soil Hazard Class by Action Alternative

	Action Alternative		
Soil Hazard Class	**2**	**3**	**4**
I	10.4	8.7	11.0
II	10	5.9	12.4
III	15.7	15.7	15.4
IV	0.7	0.2	0.7
Total[1]	36.8	30.9	39.6

[1] Totals may not be exact due to rounding within soil class.

Rock fill used in constructing the roadway would be obtained from material sources located on the island. Potential material source sites occur in numerous locations along the corridor; however, no sites have been preselected. The sites would be identified during the road design stage.

Cumulative Effects

No long-term effects to the soils resource would occur from project implementation. .

Mitigation

All Class IV soils areas would be field inventoried to determine if they should be reclassified to Class III, avoided for road expansion, or have specified erosion and mass wasting control measures developed for these areas. Measures to protect the soils resource would be employed in all road improvement areas to minimize ground disturbance and prevent the mass movement of soil. BMPs that protect the soils resource, as described in the Region 10 Soil and Water Conservation Handbook (FSH 2509.22), would be applied. These BMPs include the development of a temporary erosion and sediment control plan during road construction. Cut-and-fill slopes would be shaped to resemble the existing topography. Exposed areas would be stabilized with fast-growing, non-aggressive, native seed mix.

Minerals

Existing Conditions

The U.S. Geological Survey conducted a mineral resource assessment of the Petersburg Quadrangle in conjunction with their Alaska Mineral Resource assessment Project. The results of this assessment program were reported in 1984 in USGS OFR-84-572 titled *Regional Geologic Summary Metallogenesis and Mineral Resources of Southeastern Alaska*. The U.S. Bureau of Mines made modifications where additional geologic mapping information or a high density of mining claims was known. These assessments identified an area north of the project roads (El Capitan Peak). It is geologically favorable for the occurrence of base- or precious metal vein deposits and skarn deposits. These are deposits derived from the limestone and may include silicon, aluminum, iron, and magnesium.

Mining of minerals has occurred southeast and west of the project area. The Salt Chuck and Brown and Rush Mines, located to the southeast, were active operations until the 1940s. The Shakan tract is located on non-federal land west of the El Capitan Cave area and is outside the National Forest boundary. The Shakan tract is mined for molybdenum (USFS 1997c). During the early twentieth century, the minerals copper, gold, silver, and marble were produced in economic quantities on Prince of Wales Island. There are no mines located within the vicinity of project roads.

Effects of the Alternatives

None of the action alternatives are expected to have an effect on mineral resources. The widening, realignment, and paving activities will generally follow the existing roadways and would not impact any known mineral deposits.

Cumulative Effects

The roadway will improve access in the area and will help to locate new potentially economically viable mineral sources.

Mitigation

No mitigation is recommended.

SCENERY

Existing Conditions

The roadway corridor passes through a visually diverse landscape of coniferous forest, alpine zone, lake shore, and saltwater shoreline. The landscape is generally hilly, if not mountainous, with gentle slopes and good spatial variety. Forestlands adjacent to the roadway vary from active harvest areas to protected old-growth and river corridors. Views from the roadway vary from enclosed forested landscapes to scenic vistas of saltwater shore and alpine landscapes.

The existing narrow, one-lane road is relatively small scale. The roadway follows the landscape closely, fitting into the surrounding topography. The current alignment winds through the landscape, providing a constantly changing scenic experience.

Forest Plan Standards and Guidelines

The Forest Plan includes specific standards and guidelines for scenery that apply to development on forest lands. Standards and guidelines relate to adopted forest LUDs and Visual Quality Objectives (VQOs). Forest-wide standards and guidelines described in the Forest Plan will be applicable to the roadway development during the design phase. Standards and guidelines for projects of this type focus on the locations of rock sources and the treatment of areas outside the roadway disturbed by construction.

Certain land and water transportation routes in national forests are designated as Visual Priority Routes (VPRs). The existing roadway is not a designated VPR; however, it is likely that it may meet criteria for designation following the completion of any of the action alternatives described in this document.

Impacts from the project are likely to be most noticeable in the foreground portion of view. LUDs, associated foreground VQOs adjacent to the roadway, and mileage of these designations adjacent to the roadway corridor are shown in Table 3-17.

Table 3-17. Land Use Designations, Foreground Visual Quality Objectives, and Mileage by Alternative

		Mileage		
LUD	**Foreground VQO**	**Alternative 2**	**Alternative 3**	**Alternative 4**
Timber Production	Modification	20.3	14.6	22.3
Old-Growth Reserve	Retention	5.3	5.6	6.5
Recreational River	Retention	2.6	2.6	2.6
Modified Landscape	Partial Retention	0	1.2	0
Special Interest Area	Modification	0.4	0	0
Primitive Recreation	Retention	0.1	0.1	0.1
Non-National Forest[1]	N/A	8.0	6.9	8.1

[1] Non-National Forest Land is not classified by LUD and includes areas crossed by non-federal land and salt water.

Effects of the Alternatives

The effects of the proposed project are related to construction activities under the action alternatives. Under Alternative 1 (no-action), there would be no new scenic impacts.

Under all of the proposed action alternatives, the new roadway generally follows the alignment of existing roads. Impacts associated with reconstruction of the existing roadways will be less severe than construction of a roadway in a new alignment, and the completed roadway will have a similar effect on scenic resources as the existing roadway.

The proposed actions will not obstruct any existing views, and views from the highway may be improved. The road will be a more prominent visual feature in views towards the road from the surrounding landscape.

Potential long-term impacts common to all of the action alternatives include changes to the scale and character of the roadway, and changes to the surrounding landforms that may contrast with the natural character of the landscape. Both asphalt-paved and gravel-surfaced roadway would be wider than the current roadway, increasing the prominence of the roadway in relation to its landscape setting. Where the roadway is asphalt paved, the surface of the road will be more uniform in color and texture, and the surface will have a crisper, more geometric shape. Painted lane stripes and roadside appurtenances such as guardrails and traffic signs will be new visual elements.

Other long-term modifications to the scenery include reshaped ground planes resulting from road grading and rock extraction. The contrast between these areas and the surrounding landscape is generally reduced over time as vegetation is reestablished.

Temporary scenic impacts include cleared areas around the roadway for construction access, staging, and cut-and-fill slopes. Cleared areas generally contrast with surrounding vegetation, and unvegetated ground surfaces can contrast prominently with the adjacent landscape.

As the alternatives progress through the design phase, there will be locations where the new road alignment varies from the existing roadbed. In these locations, the abandoned portions of the existing road will increase the perceived area of visual disturbance.

Alternative 2 includes a segment of roadway located on the shoreline at the north end of El Capitan Passage. This section of the road will be visible to boaters and visitors to the El Capitan site.

Alternative 3 includes a section of road reconstruction along the south shore of Neck Lake, near the community of Whale Pass. This segment of road will be visually prominent to recreational users of the lake, and the location of the road adjacent to the lakeshore limits opportunities for visual screening. Under this alternative, a segment of the road where it is located on the shoreline of Whale Passage would also be visible from the community of Whale Pass and boaters in Whale Passage.

Cumulative Effects

It can be reasonably expected that the development of the project will lead to increased development of associated facilities for roadway-related recreation or roadside services. Associated development may include facilities such as viewpoints, rest areas, campgrounds, or other similar development. These facilities are generally small in scale, and have flexible design requirements that allow visually sensitive development. It is unlikely that future cumulative actions will have significant impacts to scenic resources.

As mentioned above, it is likely that the roadway could be designated as a visual priority route following completion of a project described in any of the action alternatives. This designation would likely occur during the development of the next Forest Plan. Designation of the roadway as a VPR would result in higher scenic resource management standards being applied to areas in the viewshed of the roadway. Long-term management of the surrounding landscape to meet higher scenic standards could result in improvements to the scenery as viewed from the roadway.

Mitigation

Potential mitigation measures include:

- Roadway design to minimize required cut-and-fill slopes and associated clearing.
- Revegetating exposed embankments with native vegetation as soon as possible following construction.
- Locating areas with greater impacts, for example construction staging areas and rock pits, out of sight of the roadway or in areas with lower visual sensitivity. One indication of lower sensitivity is designation as a development LUD.
- Selecting materials for roadside appurtenances, such as guardrails, to reduce visual contrast with the adjacent landscape.
- Developing turnouts at viewpoints and other scenic locations to enhance the traveler experience.
- Backfilling, seeding, and planting roaded areas that were realigned to minimize impacts to scenery.

Recreation

Existing Conditions

ROS Settings

For recreation analysis purposes, the Forest Service has developed a classification system known as the Recreation Opportunity Spectrum (ROS). The ROS system portrays a range of recreation activities, settings, and experiences ranging from a primitive to an urban level consisting of the following classes: Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Roaded Modified, Rural, and Urban. Opportunities for quality recreation experiences within these classes depend on a variety of factors including access, facilities

present, amount of modification to the natural landscape, frequency of meeting other people, and the opportunity for solitude. As shown in Table 3-18, the majority of the project roads cross the Roaded Modified ROS setting, and the ROS settings are primarily limited to two categories: Roaded Modified and Roaded Natural.

Table 3-18. ROS Settings by Mile and Road Segment

ROS Setting	Common Route	Segment 1	Segment 2	Segment 3	Segment 4	Total[1]
Roaded Modified	19.0	6.3	4.8	1.7	9.0	40.7
Roaded Natural	5.3	0.1	1.3	1.6	0	8.4
Semi-Primitive Motorized	0.2	0	0	0	0	0.2
Total[1]	**24.5**	**6.4**	**6.1**	**3.3**	**9.0**	**49.3**

[1] Totals may not be exact due to rounding within ROS settings.

Recreation Activities

Recreational activities that occur in the vicinity of the project roads include the following:

- Fishing: The fishery on Prince of Wales Island is considered a world-class attraction that draws the most visitors to the island. According to the ADF&G, Prince of Wales Island is the fastest growing freshwater and marine sport fishery in the state.

- Hunting and Trapping: Hunting and trapping are important recreation and subsistence activities, and off-island Southeast Alaska residents are attracted to Prince of Wales Island due to its large amount of roaded area.

- Boating: Prince of Wales Island is unique among Southeast Alaska island communities in that numerous freshwater boating opportunities in lakes, rivers, and streams occur on the island, as well as intertidal and coastal boating opportunities for motorized and human-powered boats. The Sarkar Lakes, located immediately east of the Common Route, provide a unique 15-mile canoe route for intermediate skill canoeists.

- Karst Exploration: There are four unique and high quality examples of karst landscape open for recreational access: El Capitan Cave, Beaver Falls (currently under construction), Cavern Lake, and the area east of Twin Island Lake.

- Hiking: There are eight hiking trails regularly maintained by the Forest Service and numerous other pioneer trails in the North Prince of Wales Island area. Two trailheads are on the project road system: Cavern Lake Trail on Segment 2 and El Capitan Cave Trail on Segment 3. The Deweyville trailhead is located on the Common Route; however, this trail is overgrown and difficult to locate.

- Pleasure Driving: Due to the large amount of roaded area on Prince of Wales Island (1,500 miles), travelers who enjoy pleasure driving as a recreational activity are attracted to the island.

- Bicycling: Bicycling is not a developed sport on Prince of Wales Island. Although mountain biking opportunities occur on the less-traveled Forest Service roads, no specific mountain biking route has been mapped and identified as a tourist attraction. Only 56 miles of the 1,500-mile road system are paved, and these paved roads primarily occur in the urban areas of Craig and Klawock. Because of the location of these existing paved roads and the poor condition (ruts and potholes) of the primary Forest Service roads, no bicycle touring routes have been developed for visitors.

- Beachcombing: Beachcombing is a popular activity on Prince of Wales Island, and opportunities occur on Segment 1 along Whale Passage.

- Archaeological Exploration: There are archaeological and historical areas of interest in the vicinity of the project roads, notably at Sarkar Lake, the El Capitan Cave, Staney Creek, and along the Deweyville Trail. Several examples of petroglyphs exist within the project area.

Recreation sites in the vicinity of the project roads include the following:

- Common Route: A canoe route, boat launch, and cabin (not accessible by road) associated with Sarkar Lakes, undeveloped camping and picnicking areas at Sarkar Cove, and the Deweyville trail.
- Segment 1: Undeveloped camping/picnicking areas south of Neck Lake; Neck Lake Terminal Coho fishery at the outfall of Neck Lake.
- Segment 2: Undeveloped camping/picnicking areas south of Twin Island Lake, and the Cavern Lake trail.
- Segment 3: El Capitan Cave parking area, restrooms, and trail.
- Segment 4: Cavern Lake Trail and Deck.

There are also undeveloped fishing, boating, and observation sites throughout the entire roadway corridor. No existing cabins are directly accessible from project roads.

Wild and Scenic Rivers

The Sarkar Lakes area was determined eligible for Wild, Scenic, and Recreational River classification (USFS 1997a). The area is about 47 square miles and is directly east of NFSR 20 along the Common Route. Sarkar Lakes are considered outstandingly remarkable for regionally significant fish, wildlife, scenic, and historical/cultural values. The ADF&G lists this lake system among the 19 "high quality" watersheds in Southeast Alaska for its fisheries values. A cabin is also associated with Sarkar Lakes, and is considered a high-use cabin with 51 nights logged as paid use during summer 2000.

Effects of the Alternatives

The no-action alternative would not result in changes to the ROS settings or Wild, Scenic, and Recreational River status for the Sarkar Lakes area. New recreation sites may be developed as

the Forest Service receives funding through sources that include Recreation Roads, Roads to Trails, and Capital Facility Development.

Similar to Alternative 1, implementation of any of the action alternatives would not result in changes to the ROS settings (see Table 3-19 for a compilation of ROS settings by alternative) or the Wild, Scenic, and Recreational River eligibility for the Sarkar Lakes area. Forest Highway Program Funding for the improved roads includes recreation enhancement funding. Funding opportunities include, but are not limited to, interpretive and information signs, highway turnouts, viewpoints, roadside parking areas, and recreation access. Project examples include trailhead signs, road access to visitor facilities, visitor facilities, restrooms, parking areas, boat launch ramps, landscaping and site beautification, historic preservation, environmental mitigation, recreational access, and handicapped accessibility. Recreation projects associated with each of the action alternatives are described under the alternatives in Chapter 2. Sites along the road corridor under each of the action alternatives also have the potential to receive funding under Recreation Roads, Roads to Trails, and Capital Facility Development.

Table 3-19. ROS Settings in Miles by Action Alternative

	Action Alternative		
ROS Setting	**2**	**3**	**4**
Roaded Modified	29.6	25.2	32.7
Roaded Natural	7.0	5.5	6.6
Semi-Primitive Motorized	0.2	0.2	0.2
Total[1]	**36.8**	**30.9**	**39.6**

[1] Totals may not be exact due to rounding within ROS setting.

Cumulative Effects

Road improvements may include recreational enhancements for the project roads, which would result in increased recreational opportunities in the project area.

Mitigation

No mitigation is necessary.

Land Use

Existing Conditions

Project roads cross both National Forest and state-owned lands (Table 3-20). National Forest lands are managed for multiple resource uses as designated by specific LUD. The state-owned lands along the project roads were originally National Forest lands, but were conveyed to the state as National Forest Community Grants. These state-owned lands may be managed by the state over the long term or sold to the general public as private lands. Once conveyed to the state, the Forest Service GIS database no longer has access to any changes in ownership of these lands. Therefore, Table 3-20 may have categorized some land areas along the road segments as state-owned lands that may have recently been sold to the public. As shown on Table 3-20, all road segments include state- and/or privately owned lands.

Table 3-20. Land Ownership in Miles Along Project Roads

	Common Route	Segment 1	Segment 2	Segment 3	Segment 4
National Forest	20.5	3.5	3.2	0.4	7.8
State or Non-federal Lands	4.0	2.9	2.9	2.9	1.2

Effects of the Alternatives

Alternative 1 (no-action) would not result in changes or affects to land ownership within the vicinity of project roads. Over time, lands owned by the State of Alaska may be sold for private ownership. Alternative 2 would result in road improvements to 8.1 miles of state- or privately owned lands (Table 3-21). The Forest Service has a right-of-way easement for road improvements on these state- or privately owned lands of 100 ft. If realignments are necessary that would cross more than 100 ft of state- or privately owned lands, the Forest Service would be required to apply for a public right-of-way easement from the state and obtain permission from a private land owner if the alignment is located on non-federal lands. Alternative 3 has the least amount of state-owned lands, whereas Alternative 4 is between Alternative 2 and 3 regarding roads crossing non-National Forest lands. Project effects on land ownership would be most prevalent where the road alignment may need to extend beyond the 100-ft right-of-way. This would occur in areas of sensitive environmental resources (such as biologically significant wetlands and plant communities, sensitive and rare plants, and sensitive karst or cultural resources), road areas that may need to be straightened to achieve a 35-mph speed limit, or areas where bedrock or water resources prevent road expansion in the original roadway corridor.

Table 3-21. Land Ownership by Action Alternative

	Alternative 2	Alternative 3	Alternative 4
National Forest	28.7	24.0	31.4
State or Non-federal Lands	8.1	6.9	8.1

Cumulative Effects

Changes in land ownership along the project roads would occur regardless of project implementation. The road improvements proposed for the NPOW/El Capitan project are not expected to affect or be affected by these land ownership changes.

Mitigation

No mitigation measures are needed.

Socioeconomics

Existing Conditions

The two communities most dependent on the project roads are Naukati and Whale Pass. Other communities that use the roads on a regular basis for travel and subsistence include Point Baker, Port Protection, Coffman Cove, Thorne Bay, Edna Bay, and outlying residents of Sea Otter Sound. Residents from the northern portion of the island use the project roads for access to

Craig and Klawock, where supplies and services that are otherwise not available on the northern portion of the island are obtained.

The population on the island represents 1 percent of the State of Alaska population, and Alaska Natives on the northern and north-central portion of the island primarily reside in Klawock, where 54 percent of all residents are Natives (Alaska Department of Community and Economic Development 2001). Most of the communities are located within the Thorne Bay Ranger District, excepting Klawock and Craig, which are 11 and 16 road miles, respectively, southwest of the ranger district. All communities offer services, although the smaller communities of less than 600 people have limited services that include a general store, restrooms, fuel, and lodging. Some of these communities have restaurants open primarily during the summer season. The larger communities include additional services of year-round lodging and restaurants, an airport (Klawock), car rental, taxi, and retail stores. The City of Craig additionally has medical facilities and an aquatic center with a pool.

The communities on the northern portion of the island are interconnected by state and Forest Service roads within the Thorne Bay Ranger District, excepting Point Baker and Port Protection (located at the northern tip of Prince of Wales Island), which are accessible only by boat or float plane. The road system is primarily gravel, although 56 miles of paved road are within Klawock and Craig. The island ferry service is through Hollis, and additional inter-island ferry services are planned for the northern portion of the island at Coffman Cove in early 2003. This ferry service will connect Coffman Cove to Petersburg and Wrangell.

Altogether, there are 1,257 housing units within the eight communities in the northern and central portion of the island, with primarily mobile homes in the smaller unincorporated areas. About 2.2 persons occur in each household (Alaska Department of Labor 1998a). Southeast Alaska reports the highest home vacancy rates in the state, with 10 to 30 percent of the homes in the communities vacant (Wiedle 2000). A 1-percent growth rate is expected over the coming year (2002), and additional employment is expected from visitor-related services (Williams 1998). In comparison, the growth rate for the State of Alaska is expected to be 2 percent (McDowell Group, Inc. 1998). More men reside on the island than women (8 percent more), and the median age is 32 years.

Per capita income in the Prince of Wales Island area (also includes areas near but outside of Ketchikan) during 1998 was $18,278, representing a 3-percent increase from 1994 to 1998. This income is 67 percent of the United States and State of Alaska average per capita income (Fried 2000). Unemployment on Prince of Wales Island is 13.8 percent, and is seasonal with highest employment from June to September and lowest employment during January (Alaska Department of Labor and Workforce Development 1998). Prince of Wales Island employers that reported the most new hires over the past two years include Ruth Ann's Restaurant, Craig School District, Klawock Heenya Construction LL, Klawock School District, Whale Pass Resort, Craig Community Association, and the City of Klawock (Alaska Department of Labor 2001). Residents supplement their income with subsistence fishing and hunting, and the most common subsistence harvests consist of deer, salmon, halibut, shrimp, and crab.

Effects of the Alternatives

Over the long term, the no-action alternative may impact residents on North Prince of Wales Island by decreasing their opportunities for commuting to other communities, particularly to Klawock and Craig, where more employment opportunities occur. This would occur if the ruts and potholes worsen, thereby slowing vehicle speed and affecting vehicle condition through damaged tires and alignment. Residents without employment would unlikely move to these outer communities due to the difficulty of driving on the island's road system. The poor road conditions could also affect visitor usage and thereby decrease opportunities for tourist sales and employment in these communities.

The road improvements associated with the action alternatives would likely help to increase visitor use and tourist-related employment in the northern portion of Prince of Wales Island. Alternative 2 would help to increase use of all project roads because NFSR 20 is the primary transportation network on the island. Road improvements would help to disperse visitors to a variety of recreation sites in the northern portion of the island and help to prevent traffic accidents with oncoming logging trucks. Residents of Whale Pass and Naukati would be able to commute to Craig and Klawock in a shorter time period than presently occurs on the one-lane roads. Socioeconomic benefits would likely not occur to residents of Whale Pass, however, because Alternative 2 does not provide direct paved access to this community. Fewer non-residents and tourists might visit this community in an effort to avoid unpaved roads. Fewer services, lodging, and other retail good sales would likely accrue to this community.

Alternative 3 would be of greater benefit to Whale Pass residents as it includes paving NFSR 25 and 30, the primary roads into this community from NFSR 20. The paved roads would also attract visitors to Whale Pass, which may help to increase tourist-related sales and employment opportunities. More people may be interested in living in Whale Pass when there is a paved two-lane road to the community, which would help the area become incorporated as a second-class city. Alternative 3 effects to residents of Naukati would be similar to Alternative 2 because Naukati is located near the southern portion of the Common Route, which would be improved under all action alternatives.

Alternative 4 may be of benefit in attracting visitors to Whale Pass, although fewer tourists may come due to the gravel conditions of the two-lane improved road (NFSR 27). Whale Pass residents would not use NFSR 27 to commute south to Craig or Klawock because NFSR 27 is north of Whale Pass, and this improved road may not be of any advantage to Whale Pass residents. However, the two-lane road would help to reduce oncoming traffic accidents with logging trucks.

Cumulative Effects

Road improvements would help the residents of Naukati and Whale Pass by increasing the number of tourists likely to visit these communities who may ultimately buy retail goods and services in the area. The road improvements would also reduce the driving time between these communities and the larger island cities of Klawock and Craig, where there are more retail goods, services, and employment opportunities.

Mitigation

No mitigation measures are recommended.

Cultural Resources

Existing Conditions

Prehistoric sites on Prince of Wales Island were inhabited by the Tlingit and pre-Tlingit Native peoples who are believed to have originated in northeast Siberia. Two sites, dating 9200 before present (BP) and 7600 BP, occur on Prince of Wales Island south of the project area. These sites were apparently based on a coastal marine subsistence economy utilizing predominately unifacial core and blade tools (Matson and Coupland 1995; Davis 1979, 1989; David et al. 1992). Subsequent to these earlier sites, occupation sites began to appear about 5500 BP along the immediate coasts of various islands and the mainland of Southeast Alaska.

As detailed in Ackerman et al. (1987), the project area is reported by various authors (Vancouver 1978; Niblack 1890; Swanton 1908) to be in the territory of the Stikine (Wrangell) Tlingit. The Stikine claim lands extending along the eastern shore of Prince of Wales Island from Red Bay in the north, to Thorne Bay in the south. Historic Native sites present a continuation of prehistoric ones, and include winter villages, temporary camps, cemeteries, caves/rock shelters, cremation areas, ceremonial areas, petroglyph/pictograph sites, high altitude cairns, canoe pullouts, fish weirs, fort sites, garden sites, and culturally modified trees, among others.

One known cultural resource occurs in the vicinity of project roads. Just west of the quarry atop Cavern Lake is a cultural site that exists on old lake shore deposits. The current road is built on these deposits and may be overlying cultural resources. Two obsidian flakes have been found at this site, but the extent of the site has not been determined.

Effects of the Alternatives

Alternative 1 (no-action) would not affect cultural resources in the project area. Road construction associated with the action alternatives could affect existing cultural resource sites in the project area. Work conducted for Alternatives 2, 3, and 4 would occur in areas already disturbed by construction and traffic, with the exception of the possible reroutes. Alternative 4 could affect the cultural site on Cavern Cave and additional field studies and analysis would be required if this alternative is selected. For all alternatives, the Forest Service would consult with SHPO prior to project implementation to determine whether field surveys would be needed for new road construction, due to the potential for the presence of cultural resources at low elevation sites near the shoreline.

Cumulative Effects

No effects to cultural resources are expected from road construction and use. If any cultural resources are found in the vicinity of the roadway, these resources would be protected according to federal and state law and Forest Plan standards and guidelines.

Mitigation

If a cultural resource site is encountered during the course of construction, all work should cease and the Alaska State Historic Preservation Officer should be contacted. If human remains or material subject to cultural patrimony (as defined in the Native American Graves and Repatriation Act) are encountered, the local Native organizations should be contacted within 24 hours.

AIR QUALITY

Existing Conditions

Air quality is considered good in the Tongass National Forest. The air flow from the Gulf of Alaska is not tainted by industrial air pollution and, in the absence of specific data to the contrary, can be expected to meet all standards for protection of public health and welfare. Local sources of airborne particulates include motor vehicle emissions, motor vessels and cruise ships, dust, residential and commercial heating sources, marine traffic, and a limited amount of prescribed burning.

The State of Alaska Department of Environmental Conservation (ADEC) has the primary responsibility for attainment and maintenance of ambient air quality standards under the provisions of the Clean Air Act. To date, the ADEC has classified the entire Tongass National Forest, including the project area, as a Class II airshed. Class II airsheds do not have specific attainment criteria under the Clean Air Act. A Class II airshed is designated for the purposes of Prevention of Significant Deterioration, this designation allows moderate industrial air pollution concentration increases. No Class I airsheds have been designated in the State of Alaska.

Effects of the Alternatives

Alternative 1 (no-action) would have no effect on air quality. The action alternatives could have limited short-term impacts on ambient air quality from emissions of exhaust fumes, dust, and particulates from construction vehicles, asphalt surfacing, and aggregate crushing during construction. The emissions generated from road construction may temporarily affect air quality, but marine climate would reduce this affect. Watering equipment would be available to control road dust, if needed, during dry periods. There would be no project impacts associated with burning, as open burning of cleared debris is not allowed. Construction vehicles would cause some increase in vehicle emissions for the duration of the project. However, the level of vehicle emissions is considered negligible, and local sources of airborne particulates would remain approximately the same. The actions associated with any of the alternatives are not expected to change local air quality conditions.

Cumulative Effects

The project would not affect the air quality attainment status for the area.

Mitigation

Outside of ensuring that watering equipment is available during dry periods, no other mitigation measures are necessary during project construction.

Findings and Disclosures

To proceed with road improvements as addressed in this EA, various permits must be obtained from federal and state agencies. The following permits would be necessary.

Federal Permits

USDA Forest Service

Special use permit for work on National Forest land would need to be obtained from the construction contractor, which may include material source sites, disposal areas, and contractor staging areas

U.S. Army Corps of Engineers

Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)

U.S. Environmental Protection Agency

National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act)

State Permits

State of Alaska, Department of Natural Resources

Temporary water use permit

State of Alaska, Department of Fish and Game

Title 16 fish passage permit

State of Alaska, Department of Governmental Coordination

Coastal zone management consistency determination

State of Alaska, Department of Environmental Conservation

Certification of compliance with Alaska water quality standards (Section 401 certification) for discharges to waters of the United States, part of federal Clean Water Act

State of Alaska, Department of Transportation

Public right-of-way easement where the proposed realignment traverses state-owned property

Applicable Laws and Executive Orders

National Historic Preservation Act of 1966 (as amended)

National Environmental Policy Act (NEPA) of 1969 (as amended)

Marine Mammal Protection Act of 1972

Endangered Species Act (ESA) of 1973 (as amended)

Clean Water Act of 1977 (as amended)

American Indian Religious Freedom Act of 1978

Archeological Resource Protection Act of 1980

Cave Resource Protection Act of 1988

Magnuson-Stevens Fishery Conservation and Management Act of 1996

Executive Order 11593 (cultural resources)

Executive Order 11988 (floodplains)

Executive Order 119990 (wetlands)

Executive Order 12898 (environmental justice)

Executive Order 12962 (aquatic systems and recreational fisheries)

Chapter 4
References

Ackerman, R.E., K.C. Reid, J.D. Gallison, and E.R. Chesmore. 1987. Archaeology of Coffman Cove: A Survey of 15 Timber Harvest Units on Prince of Wales Island, Southeastern Alaska. Project Report Number 5. Pullman: Center for Northwest Anthropology, Washington State University.

Alaska Department of Community and Economic Development. 2001. Alaska community information summary: Klawock. Available at: http://www/dced.state.ak.us/mra/CF_CIA.cfm .

Alaska Department of Fish and Game. 1999a. Sport fish harvest survey information. Available at: http://www.sf.adfs.state.ak.us/statewide/participationandharvest/html/regional/southeast/1999.

___. 1999b. Black Bear. Federal aid in wildlife restoration management report. Survey-inventory activities 1 July 1995 - 30 June 1998. Division of Wildlife Conservation. Juneau, Alaska.

___. 2000a. Deer hunter surveys 1980-1999. Division of Wildlife Conservation. Juneau, Alaska.

___. 2000b. Wolf. Federal aid in wildlife restoration management report. Survey-inventory activities 1 July 1996 - 30 June 1999. Division of Wildlife Conservation. Juneau, Alaska.

Alaska Department of Labor, Research and Analysis Section, Demographics Unit. 1998a. Alaska population projections: 1998-2018.

___. 2001. Top employers of new hires: Prince of Wales and Outer Ketchikan census area. Available at: http://www.labor.state.ak.us/research/erg/v_f7.htm.

Alaska Department of Labor and Workforce Development. 1998. 1998 employment and earnings for Prince of Wales-Outer Ketchikan census area. Research and analysis section. Juneau, Alaska.

Aley, T., C. Aley, W. Elliot, and P. Huntoon. 1993. Karst and cave resource significance assessment, Ketchikan Area, Tongass National Forest, Alaska. Draft Report prepared for the Ketchikan Area of the Tongass National Forest. 76 pp. + appendix.

American Association of State Highway and Transportation Officials (AASHTO). 2001. A policy on geometric design of highways and streets 2001. AASHTO. Washington, D.C.

Baichtal, J.F. 1991. Management of Karst Areas within the Ketchikan Area of the Tongass National Forest, Southeastern Alaska. Proceedings of the National Cave Management

Symposium, sponsored by the American's Cave Conservation Association, Bowling Green, Kentucky.

Baichtal, J.F. and D.N. Swanston. 1996. Karst landscapes and associated resources: A resource assessment. General Technical Report, PNW-GTR-383. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, Oregon. 13 pp.

Baichtal, J.F., D.N. Swanston, and A.F. Archie. 1996. An ecologically based approach to karst and cave resource management. Pages 10-27 *in*: Proceedings of the 1995 National Cave Management Symposium, 1996, October 25-28; Mitchell, Indiana: Indiana Karst Conservancy.

Balsiger, J.W. 2001. North Prince of Wales Road Project – Request for Endangered Species Act (ESA) and Essential Fish Habitat (EFH) information. Unpublished letter by National Marine Fisheries Service, Juneau, Alaska to Parametrix, Inc. Kirkland, Washington.

Beschta, R.L. 1978. Long-tern patterns of sediment production following road construction and logging in the Oregon coast range. Water Resouces Research 14:1011-1016.

Bjornn, T.C. and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. In: Influences of forest rangeland management on salmonid fishes and their habitats. William R. Meehan, Editor. American Fisheries Society Special Publication 19:83-138.

Brew, D.A., S. Overshine, S. Karl, and S. Hunt. 1984. Preliminary Reconnaissance Geologic Map of the Petersburg and Parts of the Port Alexander and Sumdum 1:250,000 Quadrangles, Southeastern Alaska. United States Geological Survey, Open File Report 84-405.

Bryant, M.D. and D.N. Swanston. 1998. Coho Salmon populations in the karst landscape of North Prince of Wales Island. Southeast Alaska. Transactions of the American Fisheries Society 127:425-433.

Cowardin, L.M., V. Cater, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service Pub. FWS/OBS-79/31, Washington D.C. 103 pp.

Davis, S.D. 1979. Hidden Falls, a stratified site in Southeast Alaska. Paper presented at the 32nd Annual Northwest Anthropological Conference, Eugene, Oregon.

_ _ _. 1989. The Hidden Falls Site, Baranof Island, Alaska. S.D. Davis (ed.). Anchorage, Alaska: Aurora Series, Volume V, Alaska Anthropological Association.

Davis, S.D., J.D. Irish, and J.E. Lobdell. 1992. A Cultural Resource Survey and Assessment of Eight Log Transfer Facilities, Southeastern Alaska. Submitted to the USDA Forest Service, Tongass National Forest, Stikine Area.

Environmental Laboratory. 1987. Wetlands Delineation Manual. Department of the Army. Washington, D.C. 100 pp.

Fried, No. 2000. Employment numbers looking better in 2000. Alaska Economic Trends 20(3): 13-18. Alaska Department of Labor and Workforce Development. Juneau, Alaska.

Fowler, W.B., T.D. Anderson and J.D. Helvey. 1988. Changes in water quality and climate after forest harvest in central Washington State. USDA Forest Service Research Paper, PNW Research Station, Portland, Oregon. PNW-RP-388.

Furniss, M.J., S.A. Flanagan, J. Ory, K. Moore and T.S. Ledwith. 1996. Watershed-scale road stream-crossing risk assessment. Watershed Management Council Networker 6:9-11.

Hicks, M.V. 2000. Federal Aid in Wildlife Restoration Management Report: Survey-Inventory Activities, 1 July 1996 – 30 June 1999. Wolf. Alaska Department of Fish and Game. Grants W-24-5m W-27-1, and W-27-2. Study 14.0. December 2000.

Lance, Ellen. 2001. Personal communication of April 10, 2001. Wildlife biologist for the U.S. Forest Service, Thorne Bay Ranger District, Thorne Bay, Alaska.

Matson, R.G., and G. Coupland. 1995. Prehistory of the Northwest Coast. Academic Press, San Diego, California.

McDowell Group, Inc. 1998. Alaska visitor arrivals, fall/winter 1996-1997. Alaska Visitor Statistics Program, Juneau, Alaska. Available at: http:/www.deed.state.ak.us/econder/pub/summ98.pdf.

Niblack, A.P. 1890. The Coast Indians of Southeast Alaska and Northern British Columbia. Washington D.C.: U.S. National Museum, Annual Report for 1888, pp. 225-386.

NMFS. 2000. Magnuson-Stevens Fishery Conservation and Management Act (MSA) and Essential Fish Habitat (EFH). Available from National Marine Fisheries Service, Northwest Region, Habitat Conservation Division website at: http://www.nwr.noaa.gov/habcon/habweb/msa.htm.

Paul, T. 2001. Personal communication of March 2001 concerning deer harvest on Prince of Wales Island. Research Analyst, Alaska Department of Fish and Game, Division of Wildlife Conservation.

Person, D. 2001. Personal communication of May 7, 2001. Biologist, Alaska Department of Fish and Game, Ketchikan, Alaska.

Reppert, R. , W. Sigleo, E. Stakhiv, L. Wessman, C. Meyers. 1979. Wetland Values: Concepts and Methods for Wetland Evaluation (Research Report 79-R1). U.S. Army Corps of Engineers, Institute for Water Resources. Fort Belvoir, Virginia.

4 References

Serrill, W. 1996. Treasures of the Tongass, The Caves of Southeast Alaska. University of Alaska Southeast Ketchikan Campus. Produced and directed by Ward Serrill.

Swanton, J.R. 1908. Social Conditions, Beliefs, and Linguistic Relationship of the Tlingit Indians. Washington D.C.: Bureau of American Ethnology, 26th Annual Report. pp. 391-485.

USDA. 1999. Draft Coffman Cove road biological assessment/biological evaluations. U.S. Department of Agriculture, U.S. Forest Service, Region 10, Tongass National Forest, Thorne Bay Ranger District, Fish and Wildlife Shop.

U.S. Forest Service. 1996. Soil and water conservation handbook, best management practices. U.S. Department of Agriculture, U.S. Forest Service, Alaska Region.

___. 1997a. Tongass Land Management Plan Revision, Final Environmental Impact Statement. U.S. Forest Service, R10-MB-338b. January 1997.

___. 1997b. Tongass Land Management Plan. Forest Plan. U.S. Forest Service, R10-MB-33dd. January 1997.

___. 1997c. Tongass Land Management Plan Revision, Final Environmental Impact Statement, Appendix, Volume 1. U.S. Forest Service, R10-MB-338e. January 1997.

U.S. Forest Service and U.S. Fish and Wildlife Service. 1990. Interagency agreement between the U.S. Fish and Wildlife Service, Alaska Region, and the U.S. Forest Service, Alaska Region, May 1990.

Vancouver, G. 1798. A Voyage of Discovery to the North Pacific Ocean and Round the World. Reprint in 1968. New York: N. Israel, Amsterdam, and DaCapo Press.

WDNR (Washington Department of Natural Resources). 1994. Watershed analysis manual. Washington State Department of Natural Resources, Forest Practices Division.

White, W.B., D.C. Culver, J.S. Herman, T.C. Kane, and J.E. Mylroie. 1995. Karst lands, American Scientist, volume 83. pp. 450-459.

Wiedle, J.M. 2000. Housing in Alaska. Alaska Economic Trends 20(12): 3-11. Alaska Department of Labor and Workforce Development. Juneau, Alaska.

Williams, G. 1998. Population projections, a probe into the future. Alaska Economic Trends 18(9): 3-13. Alaska Department of Labor and Workforce Development. Juneau, Alaska.

Wissmar, R.C., D.N. Swanston, M. Bryant, and K. McGee. 1997. Factors influencing stream chemistry in catchments on Prince of Wales Island, Southeast Alaska. Freshwater Biology, 38: 301-314.

Chapter 5
Distribution List

FEDERAL AGENCIES

Department of the Army, Regulatory Branch Chief
National Marine Fisheries Service
National Park Service, Alaska Area Region
Natural Resources Defense Council
U.S. Coast Guard
U.S. Dept. of Energy
U.S. Dept. of the Interior
U.S. Dept. of Transportation
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. House of Representatives
U.S. National Agricultural Library
U.S. Naval Observatory
U.S. Senate
U.S. Senate, Juneau Office
U.S. Army Corps of Engineers

STATE AGENCIES/ELECTED OFFICIALS

Alaska Board of Fisheries
Alaska Department of Environmental Conservation
Alaska Department of Fish and Game
Alaska Department of Transportation
Alaska Department of Natural Resources
Alaska Division of Government Coordination
Alaska Legislative Information Office
Alaska Office of the Governor
Alaska State Representative

LOCAL AGENCIES

City of Coffman Cove

City of Craig
City of Hydaburg
City of Kasaan
City of Ketchikan
City of Klawock
City of Thorne Bay
City of Thorne Bay, Prince of Wales Advisory Council
Craig Advisory Committee
Craig Community Association
Edna Bay Advisory Committee
Greater Prince of Wales Chamber of Commerce
Hydaburg Advisory Committee
Ketchikan Advisory Committee
Ketchikan Chamber of Commerce
Organized Village of Kake
Organized Village of Saxman
Point Baker Community Council
Port Protection Community Association
Prince of Wales Chamber of Commerce

NATIVE AMERICAN ORGANIZATIONS

Chilkat Indian Village (Klukwan)
Chilkoot Indian Association
Douglas Indian Association
Hoonah Indian Association
Ketchikan Indian Corporation
Klawock Tribal Government
Metlakatla Indian Community
Native Village of Kasaan
Petersburg Indian Association
Sitka Tribe of Alaska
Tlingit & Haida Central Council
Tongass Tribe
Yakutat Tlingit Tribe

ORGANIZATIONS

Alaska Co-op Extension
Alaska Forest Association, Inc.

Alaska Society of Forest Dwellers
Alaska Timberline Corp.
Alaska Women in Timber
Alaskans for Responsible Resource Management
Angoon Community Association
CARE
Forest Conservation Council
Forest Guardians
Glacier Grotto
Hydaburg Cooperative Association
Karst Research Group
Ketchikan Visitors Bureau
Klawock Cooperative Association
Prince of Wales Conservation League
Prince of Wales Loggers League
Sitka Conservation Society
Society of American Foresters
Southeast Alaska Conservation Council
Southeast Alaska Seniors Association
Southern Southeast Reg. Aquaculture Association
Sumner Strait Advisory Committee
Tongass Conservation Society
West Naukati Homeowners Association
Whale Pass Homeowners Association
Wrangell Cooperative Association

BUSINESSES

Adventure Alaska Southeast
Age Cedar Products
Basic Transportation Co.
Bear Valley Lodge
Bishop Log Salvage
Black Bear Cedar Products
Blue Lagoon Oyster Farm
Boardwalk Wilderness Lodge
Boyer Alaska Barge Line
Byron Brothers Cutting
Cape Fox Corporation

Construction Machinery, Inc.
Cove Lumber
Deer Creek Cottages
Doug Wilhite Riverguide
Durrette Construction
FlyQuest Adventures
Forestry Sciences Lab
Garcon Enterprises
Gateway Forest Products
Haida Corporation
Hamar Sawmill
Harding's Custom Specialty Woods
Harza Engineering
Hedges B&B
Herrera Environmental Consultants
J&J Charters
Kavilco, Inc.
Ketchikan Daily News
Ketchikan Gateway Borough
Klawock Heenya Corporation
LB Logging
Mariner, Inc.
McFarland's Floatel
Miller Shingle Company, Inc.
Mountain Man Cutting
Naukati Adventures
North Star Cedar
Oceanview RV Park
Pacific Log and Lumber
Petro Alaska, Inc.
Reid Brothers Logging and Construction Inc.
Robertson, Monagle & Eastaugh
Schmolck Mechanical Contractors
Seaford Construction
Sealaska Corp.
Sealaska Timber
Shaan-Seet, Inc.
Silver Bay Logging
Southeast Exposure
Southeast Stevadoring Corp.

Thorne Bay, Co.
TRUCO
URS, Corporation
Welcome Inn B&B
Welser Sawmill
Whales Pass Resort
Wilks Logging
Wooden Wheel Cove Lodge
Ziegler, Cloudy, King & Petersen Attorneys at Law

RESIDENTS AND INDIVIDUALS

A total of 196 residents and individuals are included in the project mailing list.

Appendix A

Scoping Report

Summary of Comments Received on the North Prince of Wales/El Capitan Road Improvements Project

APPENDIX A
SCOPING REPORT
SUMMARY OF COMMENTS RECEIVED ON THE NORTH PRINCE OF WALES/EL CAPITAN ROAD IMPROVEMENTS PROJECT

The proposed North Prince of Wales/El Capitan Road Improvements project would result in upgrades to Forest Development Roads 20 and 15 (which provide access to the El Capitan Cave from the intersection of Forest Development Road 23 and the southern portion of Forest Development Road 20 [the Coffman Cove intersection]) and Forest Development Roads 25, 27, and 30 (which provide access to the community of Whale Pass). Road improvements would enhance inter-island community access for the residents of Naukati, Whale Pass, Coffman Road, Thorne Bay, Klawock, and Craig. The existing route consists of a one-lane roadway with limited turnouts to allow passing. Other road deficiencies include substandard sight distances, narrow and/or obstructed culverts, extensive "corduroy" sections, and settlement in muskeg areas. The roads are used by the timber industry, tourists, and residents of nearby communities. The improved roadway would consist of two lanes and would be either asphalt or gravel. Additional improvements include culvert replacements and minor roadway alignment shifts to avoid sensitive areas.

Six public meetings and one agency meeting were held for this project Environmental Assessment (EA), as well as a planned Thorne Bay Recreation Master Plan. Comments at these meetings were separated between the two topics so that the discussion provided below focuses on road-related comments and any recreation enhancements that could possibly be obtained through road enhancement funding. Other recreation-related comments for the Thorne Bay Recreation Master Plan were incorporated as suggestions for this Master Plan.

The main road-related comments included suggestions regarding specific road improvement areas (e.g., widening specific intersections, including improvements to roadways that travel through Whale Pass), questions as to funding sources and maintenance plans, and concerns over natural resources (e.g., karst and caves, fish, water quality, wildlife, and wetlands) and subsistence use. Comments on the Recreation Master Plan included suggestions for types and locations of specific recreational enhancements. More detailed information on the comments received at each public meeting, as well as comments received in writing, is provided below.

THORNE BAY

The first public meeting was held on January 22, 2001 in Thorne Bay at the city council community building. Two people attended the meeting. After an informal presentation that described the project and the proposed route, the meeting was opened to questions and comments that included the following:

- Concern for caves and karst areas near the road.
- Suggestion to open up the vegetation near Naukati Creek to obtain a view of the area lakes, as well as add a picnic area.
- Comment that the road needed to be resurfaced and there was considerable litter near the road.
- Note that the road to Whale Pass should also be surfaced.
- Problem with the intersection of the Whale Pass road with Forest Development Road 20 (difficult sight conditions). The commenter also suggested that the vegetation be cleared in the area to provide better visibility for cars. The USFS suggested a revised intersection more in the shape of a T.

Suggested recreation opportunities that could be associated with the road enhancement projects included restrooms near the road (Beaver Falls trailhead, Coffman Cove junction with Forest Development Road 20, and Control Lake junction).

PRINCE OF WALES CITIZEN ADVISORY COUNCIL

The second meeting was held at the Klawock community center. The EA was an agenda item during the Prince of Wales Citizen Advisory Council meeting on January 23, 2001. The discussion centered on a description of the project and a request for comments to be taken following the meeting or sent by letter to the Thorne Bay District Ranger. One individual asked how road selection for this project occurred, and why the route through Whale Pass was not included. The USFS responded that a road to Whale Pass might better be served with Forest Highway funding rather than Public Forest Service Road funds due to the different overall funding objectives.

CRAIG

A third meeting was held that evening (January 23, 2001) at the Craig city council chambers. Seven people attended the meeting. The project was initially described with a request for comments and suggestions. The following comments were received:

- A question was discussed concerning where road rerouting might be needed for this project to achieve a 35-mph speed limit. The response was that the specific areas for road relocations would be evaluated in detail by an engineer. It was explained that the information would be developed during the EA and design phase of this project.
- Other questions concerned whether the road would remain open all year, who would be performing road maintenance, and whether snow plowing would occur. It was explained that the Forest Service would maintain the road, although it is unknown as to whether the road would be snow-plowed during winter months.
- One individual requested a cost-benefit analysis.
- Another individual wanted to know if ADOT would be involved in maintenance. The response was that, at this time, ADOT does not plan to be involved in road maintenance.

- One question concerned the amount of funding planned for road paving and road enhancement. The response was that the initial projection for the total project cost was about $79 million.
- A resident stated his concern that the paved road may attract too many RV users.
- One individual stated that the intersection near Neck Lake should be redesigned and he suggested a scenic rest stop and view of the lake.
- One individual requested that the road be designed to minimize maintenance requirements.

Recreation enhancements pertinent to the road improvements included the following:

- El Capitan as a campground for RVs and additional public use (showers, boat launch, small cruise ship destination) with a concessionaire managing the area;
- restrooms at the junction to Whale Pass and at El Capitan Cave;
- garbage dump sites and recycling areas;
- overnight areas (cabins and shelters) close to the road;
- a cabin at Sarkar Lake;
- a trail and parking facility at near Sarkar River;
- a trail, trailhead and interpretive signs at the Deweyville trail;
- upgrade the fossil pit near the road and use it for a rest stop;
- boat access to Sarkar and Neck Lake; and
- if trash cans cannot be provided, signs should direct recreationists as to where trash cans are located on the island.

COFFMAN COVE

The Coffman Cove meeting was held on January 24, 2001 at the city council chambers. Following a short description of the project, the meeting was opened for questions. A total of 15 people attended this meeting. Comments received include the following pertinent to this EA:

- the area near Sarkar and Neck lakes is littered with caves which could affect road construction,
- the road project schedule (a hand-out was provided that projected when funding is expected to occur for island road construction projects),
- question on the status of Deweyville trail maintenance plans (this trail crosses the road),
- expanded road shoulder to allow pedestrian and bicycle use,
- the potential for increased litter on the road,
- the suggestion that waste from the road alignments may be used to construct mountain bike trails,
- recommended road enhancements to include parking near trails, scenic views from the road, pavilions and trails near lakes by the road, rest stops at Control Lake, and boat launch at El Capitan spit.

PUBLIC AGENCY MEETING AT THORNE BAY

An agency meeting was held in Thorne Bay on January 25, 2001 and included USFS staff (Robert Wetherell [USFS project manager], Jim Beard [USFS fish biologist], Ellen Lance [USFS wildlife biologist]), Andy Hughes (ADOT), Chris Meade via phone (USEPA), and Mark Minnillo (ADF&G). After the USFS provided a description of the project, the meeting was opened to questions and comments that included:

- ADF&G's initial concerns were on stream crossings. The USFS stated that all culverts would be evaluated independently and replaced or retrofitted to ensure fish passage for all species present and all life stages of these species.
- The group noted that the FHWA project at Ward Creek was well done regarding fish passage.
- ADF&G requested that all streams are crossed perpendicular to the road, wherever possible.
- ADF&G also requested that minimum fill is used adjacent to streams.
- The USFS stated that inwater work would be conducted according the guidelines agreed to by USFS and ADF&G.
- Sarkar Lakes were mentioned as important for sockeye salmon subsistence fishing.
- ADF&G and the USFS were concerned about the potential for sedimentation, turbidity, and erosion, but believed that impacts can be mitigated using BMPs.
- ADOT stated that the agency would like to see the road improved. Andy said that ADOT will not be responsible for maintaining the road. ADOT's mission is for improving transportation connections between communities, whereas the USFS mission is to provide seamless transportation corridors.
- The USFS stated that timing was important to minimize impacts to wildlife. All timing restrictions for animals must be carefully followed including the bald eagle, swans, and goshawks, wherever nest are near the road.
- The USFS stated that the paved roads would increase access for subsistence hunters. However, the construction of new roads on the island has not resulted in an overall decrease in the number of deer harvested to date.
- The USFS requested that tree felling in the vicinity of streams occurs away from the streams.
- There was an area where the road parallels Sarheen Creek. This may be an area where the road may need to be relocated way from the creek.
- It was stated that a paved road may result in reduced sedimentation to the creeks.
- There is a possibility the stream restoration of riparian areas may also result in wetland restoration.
- Road waste from this project could be used as barriers for closing other roads.
- Wetland mitigation was discussed whereby avoidance is the first priority, followed by minimizing wetland impacts, and then mitigating wetland impacts.
- The USEPA stated that secondary impacts should also be addressed including fish and subsistence, as well as cumulative effects.
- The ADF&G requested that all rest room facilities are located away from streams.

- A boat launch at Tonga Lake was suggested for recreation enhancement, with a trail to the water, as well as a boat ramp at El Cap.

NAUKATI

The meeting was held on January 25, 2001. The meeting began with a description of the road project followed by a question, comment, and answer period. A total of 13 people attended this meeting. The following comments were noted:

- It was requested that fish passage issues be evaluated.
- One person wanted to know how a wetland is determined. The methodology on how wetland delineation is conducted was explained.
- Another question was in regards to what agency will perform road maintenance and snow plowing. The USFS stated that the Forest Service would conduct road maintenance but not necessarily snow plowing.
- An individual wanted to know the overall road schedule. The USFS provided a schedule handout for road improvements planned on the island.
- Another person stated that there might be too many tourist vehicles on the road once it is paved.
- One resident wanted to know how to obtain construction employment for this road.
- A person stated that the new road could impact Naukati's remote character.
- A recreation enhancement mentioned included trail and camping upgrades at Sarkar Lake.

WHALE PASS

This meeting was held on January 26, 2001, with 9 people signing the register. The meeting was held at the community fire station building. The project purpose and need, along with an overall description was discussed. Suggestions, comments, and questions included the following:

- It was brought up that the State of Alaska is considering subdividing land that is in the vicinity of this road. The land is planned for commercial, industrial, and residential development. The area is planned for subdivision beginning July 21, 2001.
- Another person requested information on the width of the road. It was explained that the road would have two single lanes, each 11 ft in width with an additional 2-ft shoulder on either side.
- One individual stated that she would prefer that the road is a single lane with lots of speed bumps to make sure that traffic was slow.
- The 35-mph speed limit was acceptable to those attending the meeting.
- Several residents requested that the road improvements are rerouted to go through Whale Pass as a loop up to El Capitan. The loop would include Forest Development Roads 25, 30, and 27. They stated that Forest Highway funds may not be available to the community of Whale Pass because they were unsure if they had a large enough population to be considered a second-class city. They also stated that there were

recreation opportunities that would attract tourists to Whale Pass before or after they visited the El Capitan Cave site. These recreation amenities include the fish hatchery, Neck Lake, and Cavern Lake. They stated that Whale Pass is a scenic area for tourists.

- One resident stated that the existing gravel road brings up dust by her home.
- Another question concerned the project schedule. A hand-out with a general schedule for all of the roads on POW Island that were to be paved was provided.
- Another resident requested that the road to Whale Pass is chip sealed when road construction begins on Forest Development Road 20.

SUMMARY OF COMMENTS RECEIVED AS WRITTEN COMMENT

The following comments shown in Table A-1 are presented by date of receipt, and are paraphrased.

Table A-1. Summary of Written Scoping Comments Received for the NPOW/El Capitan Road Improvements Project

Name	Date	Comment	Response
Buck Bryant/Brenda Wright	1/10/01	They are glad that fish crossings will be evaluated and improved, where needed. The road improvements will help to decrease vehicle wear from gravel roads. Are also recommending outhouses by the road at popular fishing sites and other high use areas.	All fish crossings will be evaluated and replaced or retrofitted to ensure passage for all fish species present and their respective life stages. Outhouses are a viable road enhancement project that will be considered for this project.
David Spigai	1/17/01	Supports project because it will improve infrastructure on POW Island and allow for a more efficient road system for the transport of products and services. The road is currently unsafe due to limited sight distances, narrow road widths and rough surfaces. The project will improve access to and from communities adjacent to these roads.	Comment noted. The deficiencies noted will be corrected with the proposed project.
Monte and Kay Gaymon	1/17/01	Supports road improvements because they will provide easier access into the National Forest.	Comment noted.
Barney Freedman	1/17/01	Wanted to know if preparing the recreation master plan might replace older EISs and EAs that dealt with recreation projects. Also wanted to know if the new projects identified well be open to public discussion? Asked how subsistence hunting and fishing rights are included in the plan.	The recreation master plan identifies the recreation projects that were suggested by the project, and identifies and assesses the types of projects that are needed on the ranger district. However, the master plan does not substitute for a NEPA analysis for each project. Continued public comment is expected as each recreation project receives

Table A-1. Summary of Written Scoping Comments Received for the NPOW/El Capitan Road Improvements Project (Continued)

Name	Date	Comment	Response
Echo Lodge (continued)		road seasonally, and they need a safer and more comfortable road for transporting passengers. He believes that the road to Whale Pass receives more use than the road to El Cap.	
Gary Barlow	1/29/01	Recommends that the project considers low maintenance options. Wants opportunities to salt water, overlooks, vistas, small dispersed campgrounds that have fire rings and picnic tables. States that water, garbage cans, toilets should not be provided. Recommends other areas that accommodate tent camps.	Comments noted.
Pete Smith	1/29/01	States that the purpose and need of this project may not be properly defined. Is it to expedite the transport of goods and services among the island communities or to place a transportation corridor through the forest? States that more recreation opportunities occur near Whale Pass than at El Cap. If the road is not routed through Whale Pass, then additional maintenance on that road is needed to accommodate the increased visitor use once the road to El Cap is paved. Also suggested recreation opportunities for the Master Plan.	The purpose and need for this project is defined in Chapter 1 of this EA, and includes both of the items described above. However, the primary purpose is to more easily transport goods and services within the forest using a primary arterial transportation corridor. Additional road maintenance is planned for the detour route through Whale Pass when Forest Development Road 20 is being improved. Other recreation opportunities not associated with this road improvement project were included in the Thorne Bay Recreation Master Plan.

Table A-1. Summary of Written Scoping Comments Received for the NPOW/El Capitan Road Improvements Project (Continued)

Name	Date	Comment	Response
Mark Minnillo, ADF&G	1/30/01	Recommends reducing culvert lengths to that necessary to accommodate the specified road width. Bridges should be considered in areas where changes in road alignment are not possible and where fill depths cannot be decreased. Wants to ensure that measures to minimize sediment production and maximize sediment containment occur. Waste disposal areas should avoid wetlands and other highly productive areas. Is concerned about fatal collisions with wildlife on the improved roads. Suggests signs to warn the public to reduce their speeds where high occurrence of wildlife occurs. Suggests planting areas with seeds that are unattractive to wildlife to ensure that they are not attracted to areas by the road. States that an ACMP permit approval will be necessary. Work in anadromous waters will likely be constrained by fish timing windows.	Comments noted. These recommendations are included as either components of the project design, mitigation measures, Forest Plan standards and guidelines, or required state and federal permit conditions that will be undertaken during project construction.
Michael Nichols	1/30/01	Is favorable to the road improvements. Suggests that island residents are employed for this project. Suggests a boat launch at El Capitan pass.	Comments noted.

Table A-1. Summary of Written Scoping Comments Received for the NPOW/El Capitan Road Improvements Project (Continued)

Name	Date	Comment	Response
Jennifer Garland, Alaska Division of Governmental Coordination (DGC)	1/30/01	If the road extends beyond the 100-ft reserved right-of-way on State lands, then the USFS will need to apply for a public right-of-way/easement from this office. DGC will conduct an Alaska Coastal Management Program review.	Comments noted.
Valery White	1/30/01	Concerned that road access will cause increased traffic to the north end of the island. Due to the recreational sites in the vicinity of Whale Pass, she is recommending that the road is routed through Whale Pass. If this is not possible, then she would like to see chip sealing or other improvements on the Whale Pass road where it is needed. Stated that maintenance is needed on the Whale Pass road, and wants assurance that it will continue after the road to El Cap is paved. Recommends a small campground at Neck Lake to accommodate those fishing there. Suggests a boat launch ramp in Whale Pass, preferably o the south side of the bay at the log transfer site. Another recreational improvement possibility is a small campsite on the east end of Twin Island Lake where there is a spur road that could be flattened and widened. The area is a good launch point for a bike or hiking trail to Maggie Mountain.	The route to Whale Pass was considered as an alternative route. Increased maintenance is planned for the Whale Pass route when improvement construction occurs on Forest Development Road 20. The recreation improvements will be considered as highway enhancements for this project once a preferred route is selected. Maintenance is planned over the long term for the forest roads through Whale Pass.

Table A-1. Summary of Written Scoping Comments Received for the NPOW/El Capitan Road Improvements Project (Continued)

Name	Date	Comment	Response
Jim Anderson, Alaska Department of Natural Resources	2/2/01	States that state lands provide for a 100-ft right-of-way for this road improvement project, and if more right-of-way is needed, then the Forest Service will need to apply for a public right-of-way/easement from his department.	Comment noted.
Name not decipherable.	2/2/01	States that the road is acceptable as it is north of Naukati due to its level of use.	Comment noted.
Wally Greentree	2/5/01	Recommended two recreational improvements: construct a short turn off with picnic table at the Wolf Lake Pass/Stany Creek turnoff on left going north and the two lakes north of Ball's Lake on the left. Suggests two small clearcuts to enhance the scenery.	These recreation improvements will be considered as possible road enhancement projects.
Gail Sterling	No date.	Supports the road improvements projects. Wants information on recreation projects as they come up.	Comment noted. Individual will be placed on appropriate Thorne Bay Ranger District mailing lists.
Frank Roppel	2/5/01	Would like additional camping sites without water and toilets. Wants access to the water from the road system at Red Bay and Labouchere Bay. A mooring buoy would also be helpful. Suggests a float for these areas and also at El Capitan.	Recreation suggestions will be included in the Thorne Bay Recreation Master Plan. The float at El Capitan is possible as a road enhancement project associated with this EA.

☆ U.S. GOVERNMENT PRINTING OFFICE: 2001 — 689-080 / 10066 Region No. 10

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write U.S. Department of Agriculture, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue SW, Washington, DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Federal Recycling Program
Printed on Recycled Paper

Tongass National Forest
USDA Forest Service
Thorne Bay Ranger District
P.O. Box 1328
Thorne Bay, Alaska 99919

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

PRIORITY MAIL
POSTAGE & FEES PAID
USDA F.S. / JUNEAU, AK
PERMIT NO. G-40